ELIZABETH LINE (Crossrail)

A strategic recommendation-focused presentation, supported by tools and a tailored project management plan.

Our Team:

Joshika (5597768), Siqi (5631449), Chengfeng (5609011), Nishika (5664610), Zezheng (5624380)

Agenda

01	Project Brief
02	WBS Analysis – Identifying Problem zones
03	Problem Diagnosis
04	Solution Tools and Frameworks
05	Methodology Alignment
06	Conclusion

Project Brief

Crossrail is one of Europe's largest railway infrastructure projects, aimed at improving rail capacity, connectivity, and travel times across London. The project involved the construction of 42 km of new tunnels and the integration of new and existing rail systems to deliver the Elizabeth Line

Project Goals

1. Deliver a safe and wrel.able high-capacity rail service connecting East and Wast London.
2. Complete infrastructure-signaling. and software infegration acrose.the entire line.
3. Launch operations in line with opprovered timelines and Budgets.
4. Ensure seamless collaboration among multiple contractors and agencies

Deliverables

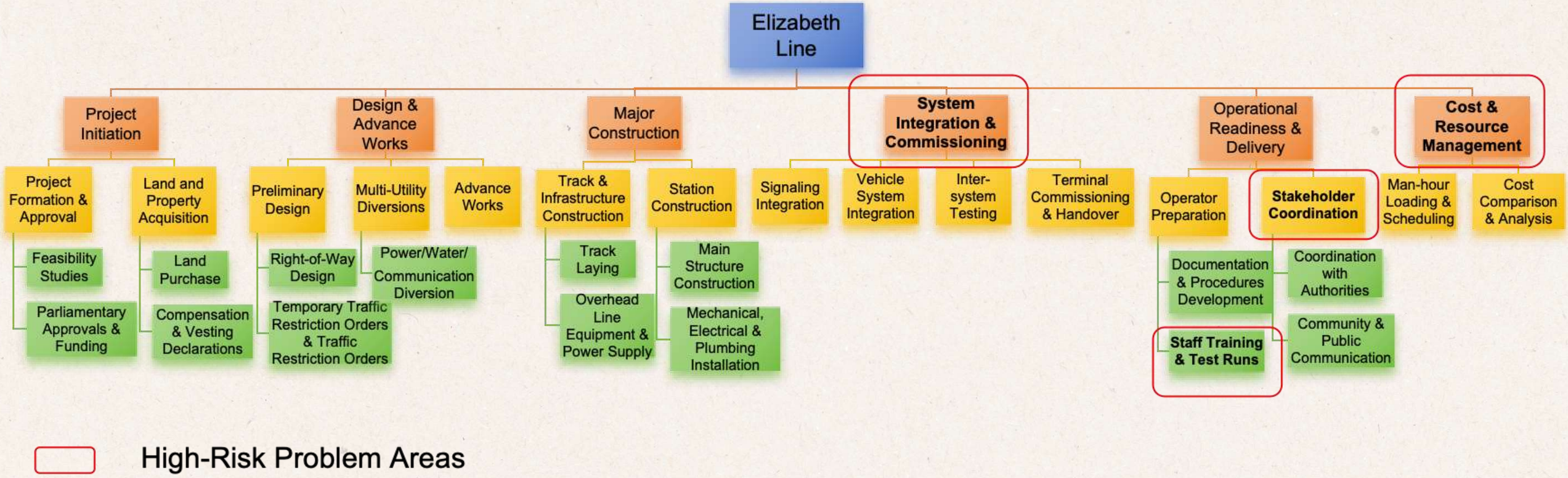
1. New furmels and upgraded stations across Landon,
2. Fully commissioned signaling and train control systems.
3. successfully tested and operational Blizabeln Line.
4. Comprehensive safety and reliability certification

Our Focus

Implementation phase

- Cost overruns
- Time delays
- Coordination gaps

Work Breakdown Analysis – Where Did It Go Wrong?



PROBLEM DIAGNOSIS ---What should be improved

1. Risk Register

Risk ID	Risk Description	Category	Likelihood	Impact	Risk Level	Mitigation Strategy	Owner
R-001	Integration failures between multiple signalling systems (ERTMS, CE	Technical	High	High	Critical	Establish a centralized integ	Systems Integration Lead
R-002	Delays in software development and testing for train control systen	Technical	High	High	Critical	Implement agile developme	Software Development Manage
R-003	Inadequate coordination among contractors causing schedule over	Organizational	High	High	Critical	Appoint a dedicated coordi	Project Coordination Manager
R-004	Shortage of skilled labor affecting construction timelines	Human Resources	Medium	High	High	Develop training programs;	HR Manager
R-005	Supply chain disruptions leading to material shortages	Supply Chain	Medium	High	High	Diversify supplier base; ma	Supply Chain Manager
R-006	Safety incidents during construction causing work stoppages	Health & Safety	Low	High	Medium	Enforce strict safety protoc	Safety Officer
R-007	Regulatory changes impacting project compliance requirements	Regulatory	Low	Medium	Medium	Stay updated with regulato	Compliance Officer
R-008	Public opposition due to environmental concerns delaying project a	External Stakehold	Low	Medium	Medium	Engage in community outre	Community Relations Manager
R-009	Financial constraints leading to budget overruns	Financial	Medium	High	High	Implement strict budget co	Finance Manager
R-010	Cybersecurity threats to project management and control systems	Technological	Low	High	Medium	Deploy robust cybersecurit	IT Security Manager

Tools Referenced:

- Risk Register (High-priority risks)
- Stakeholder Register (Misalignment shown in strategy mismatch)
- SWOT Analysis

2. Stakeholder Register

Stakeholder	Role	Power	Interest	Engagement Strategy	Notes	Engagement Method	Frequency
Department for Transport (DfT)	Sponsor / Driver	High	High	Manage Closely	Provides funding, policy oversight	Steering committee updates, high-level reports	Bi-weekly
Transport for London (TfL)	Operator / Driver	High	High	Manage Closely	Will operate the line post-handover	Daily briefings, integration workshops	Daily
Crossrail Ltd Board	Strategic Oversight	High	Medium	Keep Satisfied	Governance and assurance	Monthly reporting, milestone dashboards	Monthly
Network Rail	Contributor	Medium	Medium	Keep Satisfied	Integration with UK rail network	Technical coordination meetings	Weekly
Contractors (Siemens, Alstom, Bombardier)	Contractors	Medium	High	Keep Informed	Delivery of signaling, trains, and systems	Task tracking, agile board sharing	Weekly
MTR Elizabeth Line	Operator	Medium	Medium	Keep Informed	Day-to-day operations post-launch	Transition planning sessions	Bi-weekly
Local Councils	Informed Stakeholder	Low	Medium	Monitor	Engage with local communities and issues	Community newsletters, local meetings	Monthly
London Commuters	End Users	Low	High	Keep Informed	Main beneficiaries; affected by delays	Public announcements, service alerts	As Needed
Media/Public	Observers	Low	Medium	Monitor	Affects reputation and public opinion	Media briefings, press releases	As Needed

PROBLEM DIAGNOSIS ---What should be improved

3. SWOT Analysis

SWOT Analysis

SWOT stands for **S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats.

Internal factors

Strengths	Weaknesses
• Strong backing from UK government (DfT, TfL) • Use of advanced technologies (e.g., BIM, CBTC, ETCS) • Involvement of experienced industry contractors (Alstom, Siemens, Bombardier) • High-impact urban infrastructure project with long-term benefits	• Misalignment and poor coordination among multiple contractors • Delayed integration of signalling and software systems • Inadequate risk escalation and stakeholder communication • Ineffective resource planning and cost control

External factors

Opportunities	Threats
• Technological advances in project delivery (modular builds, automation) • Urban development and economic uplift in connected areas • Sustainability focus – chance to set green infrastructure benchmarks • Lessons learned can inform future megaprojects in the UK and globally	• Regulatory and compliance changes during implementation • Public and media criticism over delays and cost overruns • Political pressures due to increased scrutiny on government spending • Risk of technology obsolescence and vendor lock-in

● Problem 1: Contractor Misalignment

The lack of effective coordination mechanisms among multiple contractors leads to inconsistent schedule and standards.

Problem2: System Integration Delays

The lack of early planning tests and phased joint debugging resulted in repeated failures of key systems in the later stages of delivery.

Problem 3: Resource Scheduling Gaps

Resource and task scheduling are not dynamically coordinated, resulting in multiple path resource contention and scheduling conflicts.

Problem 4: Delayed Risk Response

Major risks were not reported in time, the handling process was unclear, and responsibilities across different management levels were poorly defined.

Tools Referenced:

✓ Risk Register (High-priority risks)

✓ Stakeholder Register (Misalignment shown in strategy mismatch)

✓SWOT Analysis

Solution Tools & Frameworks – Practical Fixes

Problem Area	Solution Tool/ Framework	Purpose
Contractor Misalignment	RACI Chart + IPD Principles	Clarify roles, promote shared accountability
System Integration Delays	Agile (Scrumban-lite)	Allow iteration, early feedback loops
Resource Bottlenecks	CCPM Buffers + Resource Histogram	Prioritise critical tasks, apply buffer management
Delayed Risk Response	Risk Breakdown Structure + Escalation	Structured early warning and reaction path

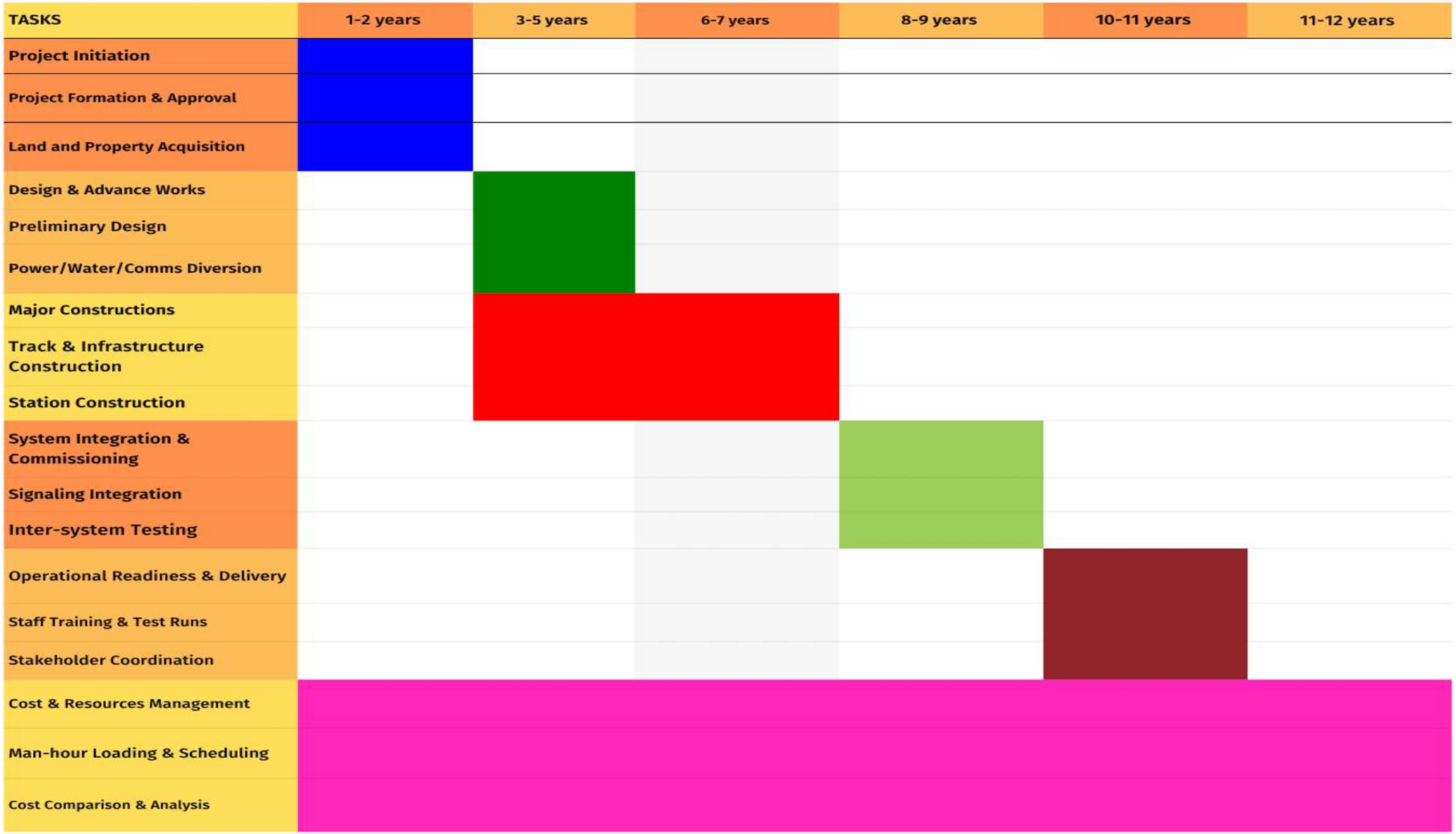
Agile (Scrumban-lite)

Conclusion

A tailored hybrid methodology combining predictability, flexibility, collaboration, and risk control

Workstreams/ Challenges	Best-Fit Methodology	Why Is It
Civil-works & Safety-Focused Construction	Waterfall / Stage-Gate	Providing the rigorous structure and predictability essential for fixed-scope elements
Testing & Integration	Scrumban-lite (One of Agile PMM)	Providing rapid feedback loops for complex and interdependent systems
Multi-Party Collaboration	Integrated Project Delivery (IPD)	Alignment of contractors, sharing risk and reward to improve transparency and efficiency.
Timeline Managment	Critical Chain Project Management (CCPM)	Using buffers to absorb uncertainty and ensure smooth task flow

Elizabeth Line – Recommended Gantt chart by phase



Our Formula For Smarter Implementation:

Waterfall backbone (Stage Gate), Agile for integration tasks,
IPD (Delivery approach) + CCPM as horizontal enablers

Many thanks for your listening!