

Chapter No 05

Estimation

5.1 Critical Path Method

5.1.1 List of Activities

Activity no.	Activity name	Predecessor	Duration (Days)
A	Gather Requirements	—	11
B	Proposal/Planning	A	5
C	Splash & Intro Screens	B	3
D	Register/Login/Onboarding	C	6
E	Trip Creation Flow	D	8
F	Invite & Join Trip	E	4
G	Real-time Location Sharing	F	10
H	Geofencing Alert System	G	7
I	Route Optimization/Navigation	G	6
J	Emergency Alerts System	H, I	5
K	Trip History & Analytics	J	6
L	Admin Panel	D, K	10
M	Final Testing	L	8

Table 5.1 list of Activities

5.1.2 CPM Diagram

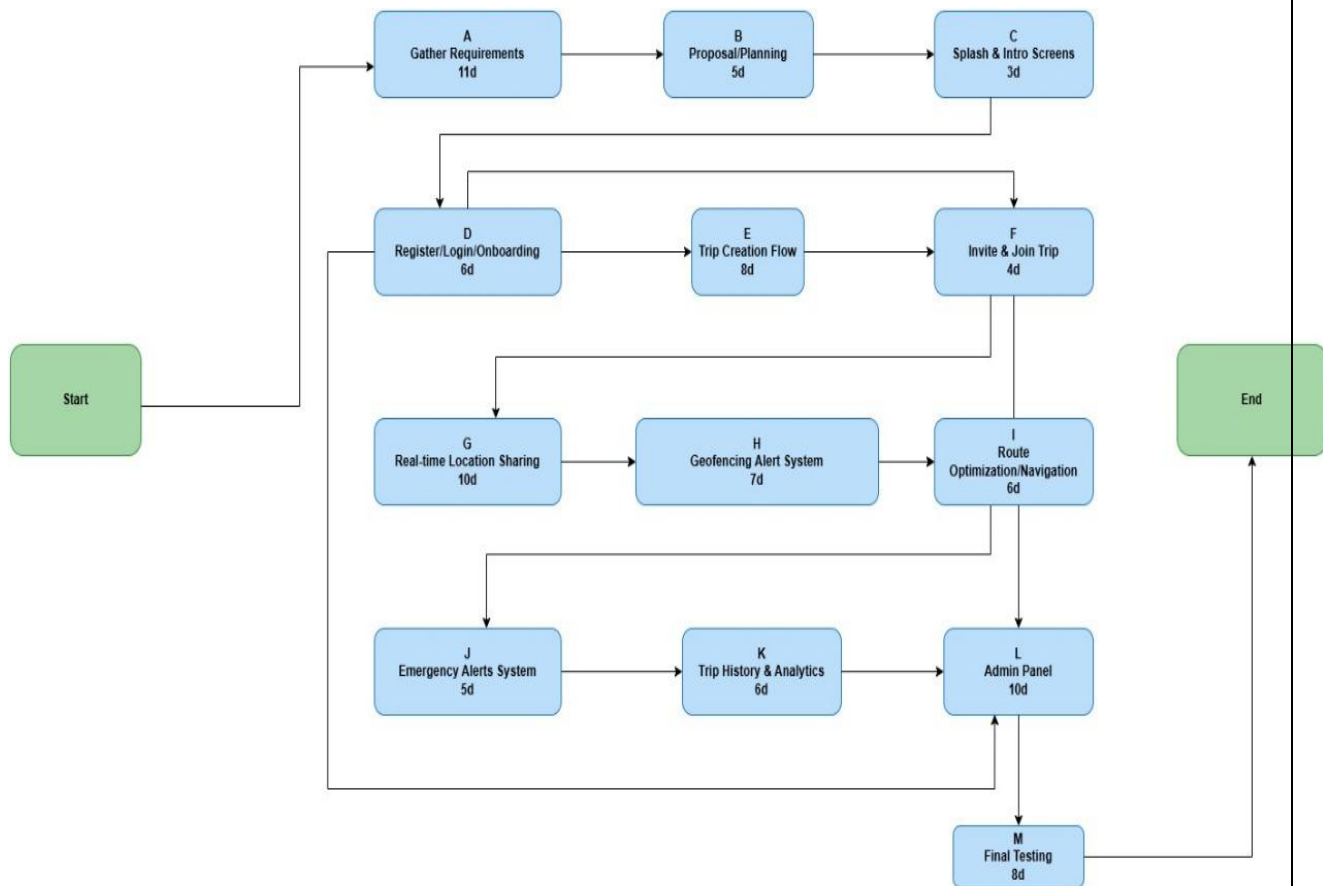


Figure 5.1

The Critical Path is:

Start -> A -> B -> C -> D -> E -> F -> G -> H -> J -> K -> L -> M -> End

5.2 Project/Product Costing

Road Sync is a mobile app for Android that uses real-time GPS and Firebase. We are using **Function Point Analysis (FPA)** to estimate how much the project will cost and how much effort it will take. FPA is a trusted and effective way to measure the size and work needed for a software project.

5.2.1 Project Cost Estimation by Function Point Analysis

Number of user inputs: 14	14
Number of user outputs	12
Number of user inquiries	10
Number of files	6
Number of external interfaces:	3

Type of Component		Complexity of Components			
	Count	Low	Average	High	Total
External Inputs	14	3	4	7	44
External Outputs	12	3	5	4	41
External Inquiries	10	4	3	3	33
External Logical Files	6	1	3	2	15
External Interfaces	3	1	1	1	6
Count Total					139

Complexity Adjustment Factor:

General System Characteristics	Value
Data communications	4
Distributed data processing	3
Performance	4
Heavily used configuration	4
Transaction rate	3
On-Line data entry	4
End-user efficiency	4
On-Line update	4
Complex processing	5

Reusability	3
Installation ease	0
Operational ease	3
Multiple sites	2
Facilitate change	3
ΣFi	50

Complexity Adjustment Factor (ΣFI) = 50

Estimate Function Point:

$$FP = 139 * [0.65 + 0.01 * 50] = 139 * 1.15 = 159.85$$

Total Function Points (FP) = 159.85

Cost / FP:

Labor Rate = ₹68,000 / PM

Productivity = 21 FP/PM

Cost per FP = ₹68,000 / 21 = ₹3,238.09

Cost / FP = 3238.09 Rs.

Total Project Cost:

Total Project Cost = FP est. * (Cost / FP)

Total Project Cost = 159.85 * 3238.09

Total Project Cost = ₹517,684.80

Total Project Cost = ₹517,684.80

Total Estimated Effort:

FP est. = 159.85

Productivity Parameter = 21 FP/PM

Total Estimated Effort = FP est. / Productivity Parameter

Total Estimated Effort = 159.85 / 21

Total Estimated Effort = 7.6 PM (Person-Months)

Total Estimated Effort = 7.6 PM (Person-Months)

5.2.2 Gantt Chart

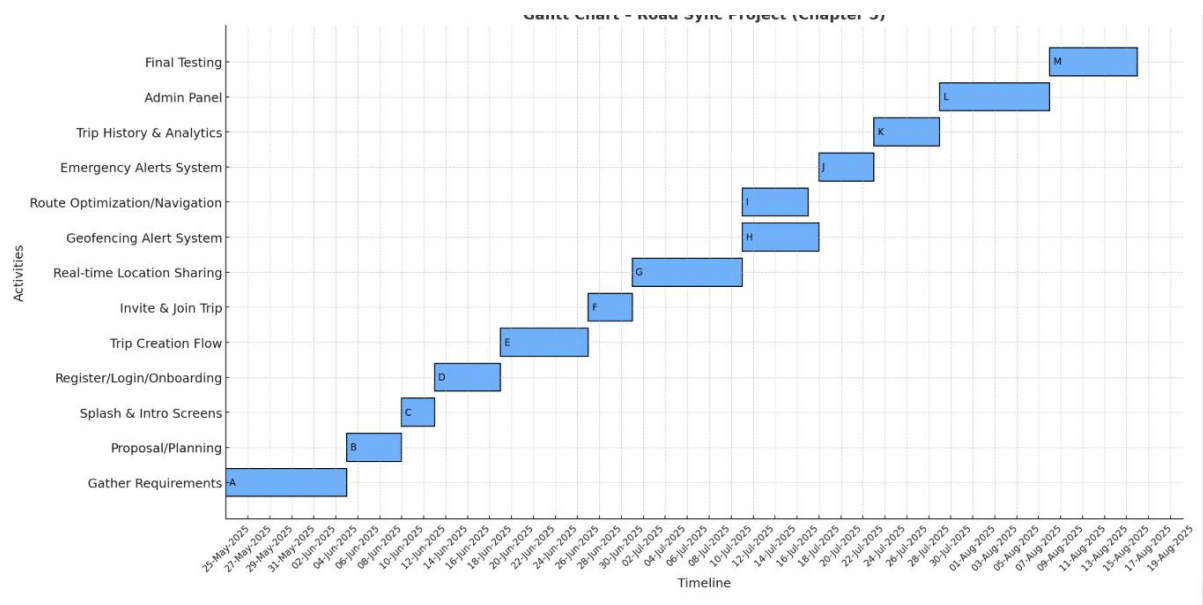


Figure 5.2