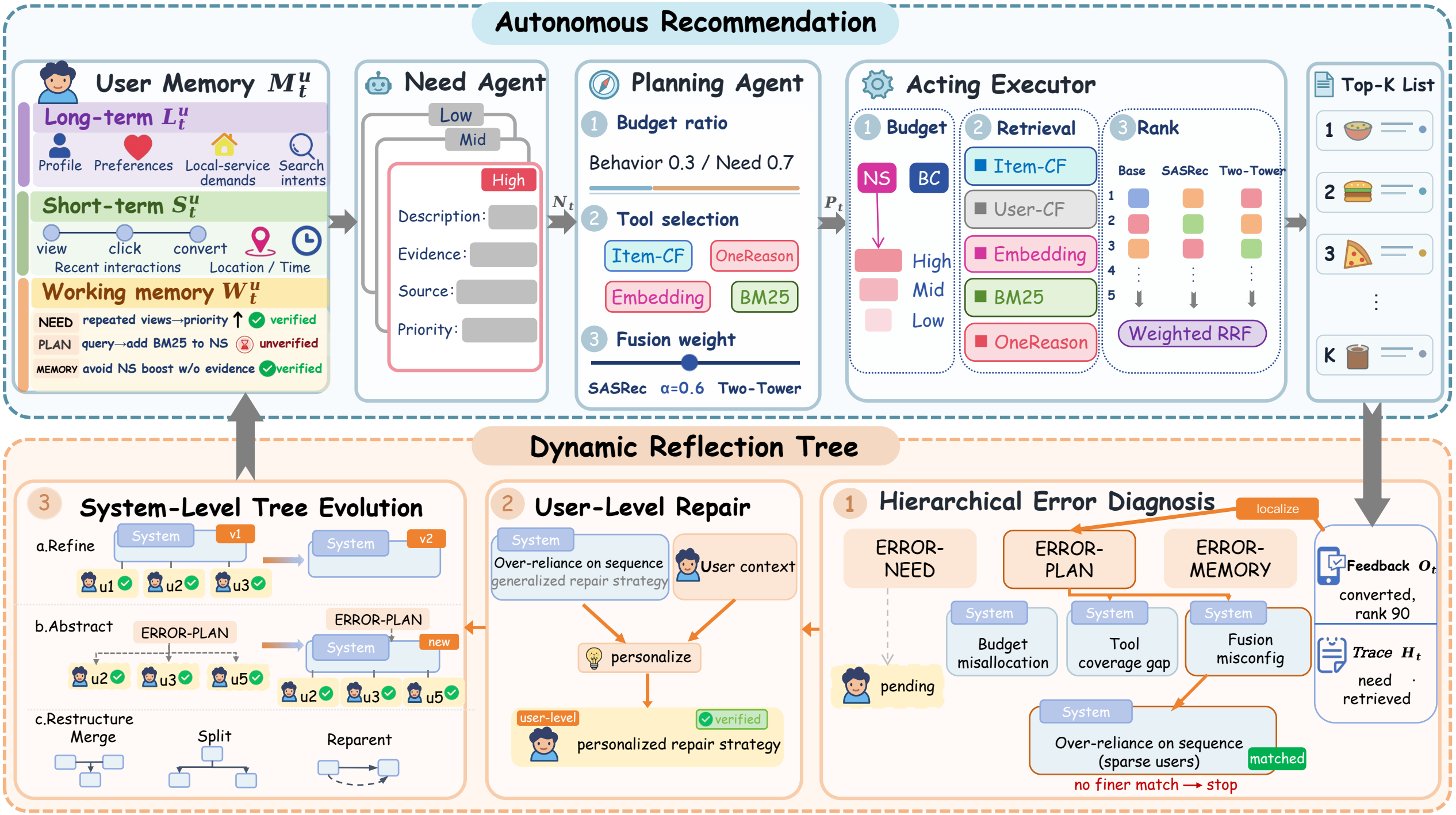

Autonomous Recommendation
User Memory M_t^u
Long-term L_t^u
Profile
Preferences
Local-service demands
Search intents
Short-term S_t^u
view
click
convert
Recent interactions
Location / Time
Working memory W_t^u
NEED repeated views→priority ↑ verified
PLAN query→add BM25 to NS unverified
MEMORY avoid NS boost w/o evidence verified
Need Agent
Low
Mid
High
Description:
Evidence:
Source:
Priority:
N_t
Planning Agent
1 Budget ratio
Behavior 0.3 / Need 0.7
2 Tool selection
Item-CF
OneReason
Embedding
BM25
3 Fusion weight
SASRec α=0.6 Two-Tower
P_t
Acting Executor
1 Budget
NS
BC
High
Mid
Low
2 Retrieval
Item-CF
User-CF
Embedding
BM25
OneReason
3 Rank
Base
SASRec
Two-Tower
Weighted RRF
Top-K List
1
2
3
K
Dynamic Reflection Tree
3 System-Level Tree Evolution
a.Refine
System
v1
System
v2
u1
u2
u3
b.Abstract
ERROR-PLAN
ERROR-PLAN
System
new
u2
u3
u5
u2
u3
u5
c.Restructure
Merge
Split
Reparent
2 User-Level Repair
System
Over-reliance on sequence
generalized repair strategy
User context
personalize
user-level
verified
personalized repair strategy
1 Hierarchical Error Diagnosis
localize
ERROR-NEED
ERROR-PLAN
ERROR-MEMORY
pending
System
Budget misallocation
System
Tool coverage gap
System
Fusion misconfig
System
Over-reliance on sequence
(sparse users)
matched
no finer match → stop
Feedback O_t
converted,
rank 90
Trace H_t
need
retrieved