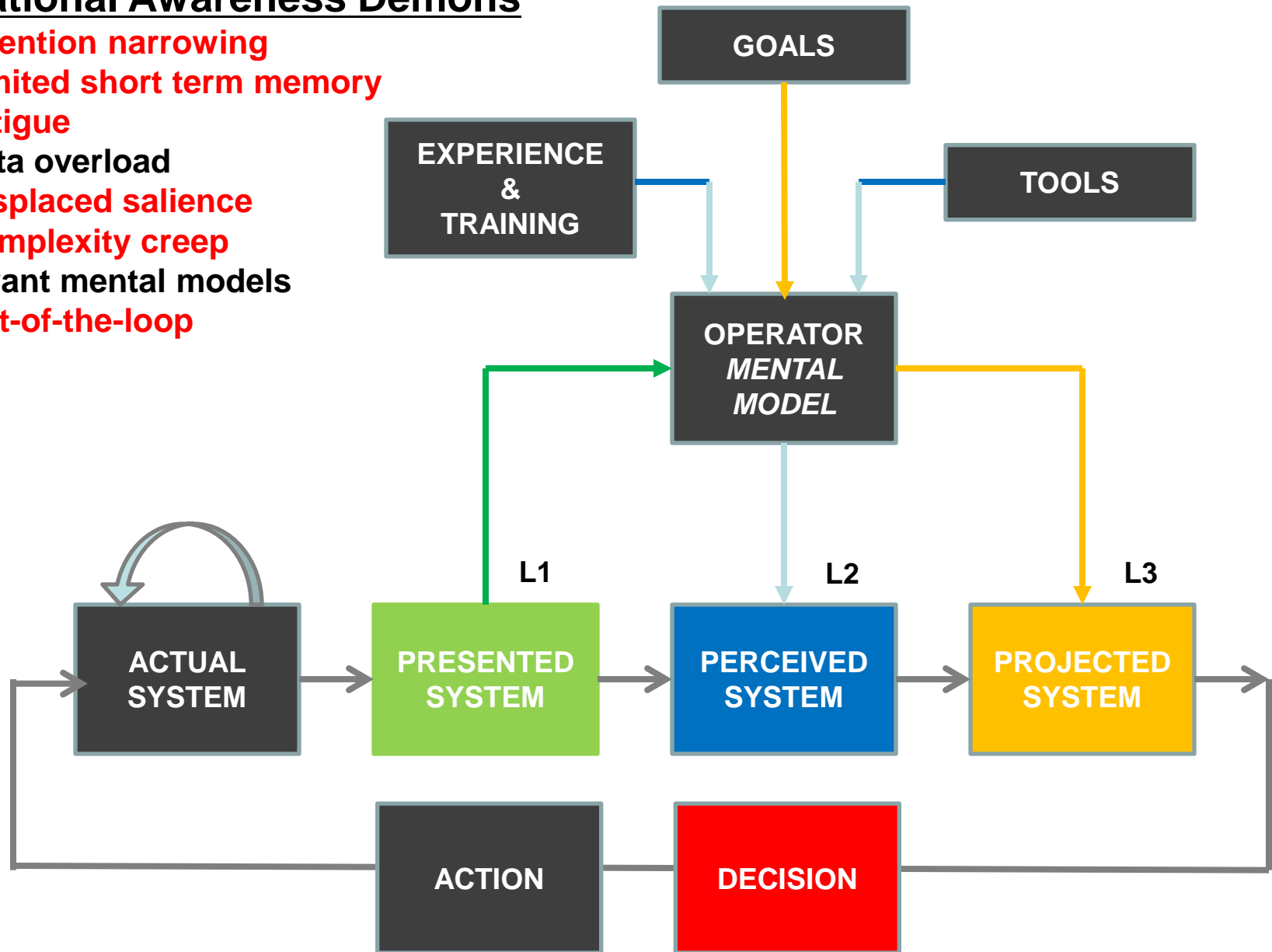


## Situational Awareness Demons

- Attention narrowing
- Limited short term memory
- Fatigue
- Data overload
- Misplaced salience
- Complexity creep
- Errant mental models
- Out-of-the-loop



# Situational Awareness

## Presented System

- ◆ Operation planning data:
  - *Generation Schedules*
  - *Transmission Outages*
  - *Load Forecast*
  - *Transaction Schedules*
  - *Planned Reserves*
- ◆ Operation data:
  - *Static State of the System (SE)*
  - *Switch/Breaker Status*
  - *Actual Reserves*
  - *Dynamic State Parameters (from PMU System)*
  - *Information on Neighboring Systems*
  - *Inputs from Neighboring Operators*

## Perceived System

- ◆ Understanding operation data
  - ◆ *Deviation between plan and actual*
  - ◆ *Vulnerabilities of Static System State (Contingency Assessment)*
  - ◆ *System Control Capabilities*
  - ◆ *Control Feasibility*
  - ◆ *NERC Requirements*
  - ◆ *Status of Equipment (old, aging)*

## Projected System

- ◆ Projecting operation data
  - ◆ *Future System State*
  - ◆ *Schedule deviation*
  - ◆ *System Load*
  - ◆ *System Performance*
  - ◆ *Time for completing actions*

## North-East Wide-Area Real Time Data Exchange

**ACE**  
**Frequency**  
**Total Load**  
**Key Interchanges**  
**Key Voltages (500, 345)**  
**Reference Bus Angle Differences (PMU / SE)**  
**SE Status (Normal, Emergency, Restorative)**  
**CA Status (Secure, Alert)**

	NB	ISO-NE	IESO	NYISO	PJM
NB		X	X	X	X
ISO-NE			X	X	X
IESO				X	X
NYISO					X
PJM					

Reserves	NYISO	ISONE	IESO	HQ	NB
Actual	1493	4259	2106	6293	1399
Required	1298	1625	1418	0	714
Surplus	195	2634	688	0	685

### NPCC GROUP ACE



IESO LOAD  
17910

HQ LOAD  
24677 T

NB LOAD  
2014

523.4 Cherrywood

Claireville

535.9 Trafalgar

539.0 Longwood

536.3 Hawthorne

355.5 Edmundston

351.3 Keswick

352.4 Pt. Lepreau

+356.2 Orrington

356.4 Maine Yankee

+353.5 Rochester

+353.6 Oakdale

+353.6 New Scotland

355.2 s Plst Valley

350.5 Ramapo

529.6 Ramapo

SAFNRMAP  
REVISION 3  
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