Visualizing Dynamic Behavior

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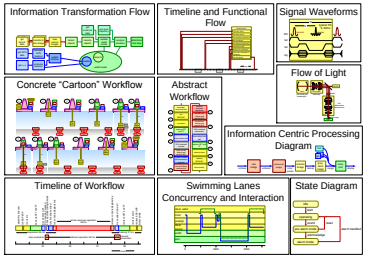
Abstract

Dynamic behavior manifests itself in many ways. Architects need multiple complementary visualizations to capture dynamic behavior effectively. Examples are capturing information, material, or energy flow, state, time, interaction, or communication.



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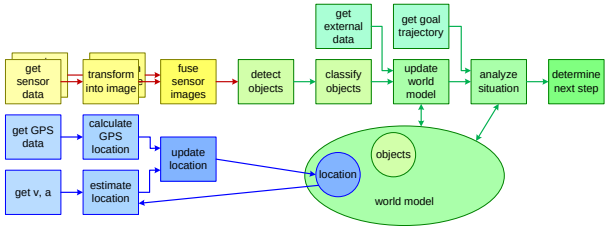
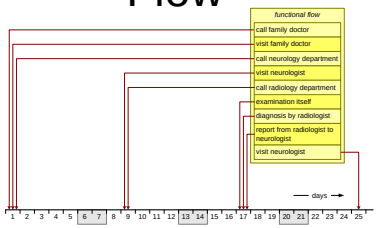
status: preliminary draft
version: 0

Overview of Visualizations of Dynamic Behavior

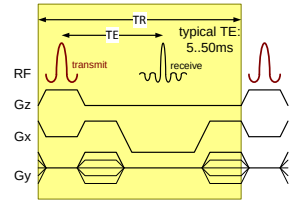
Information Transformation Flow



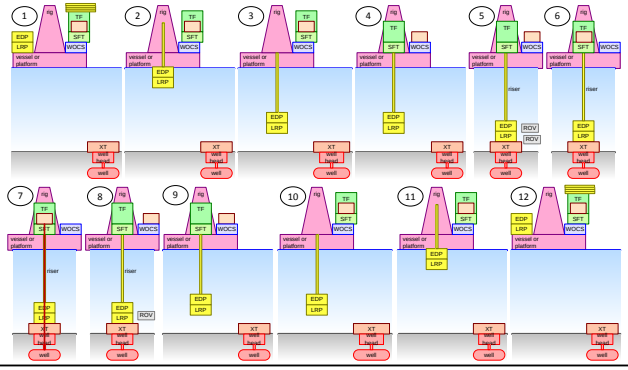
Timeline and Functional Flow



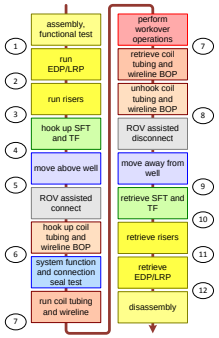
Signal Waveforms



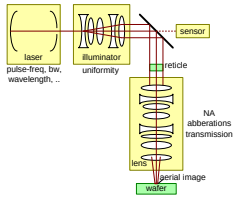
Concrete "Cartoon" Workflow



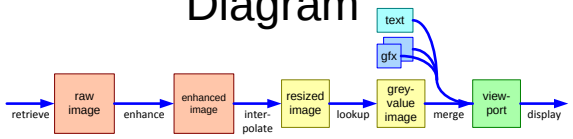
Abstract Workflow



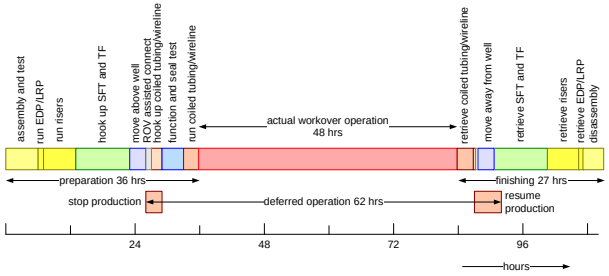
Flow of Light



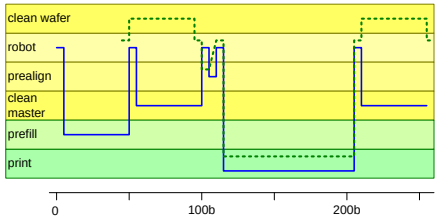
Information Centric Processing Diagram



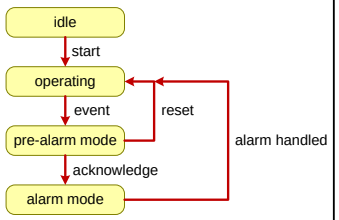
Timeline of Workflow



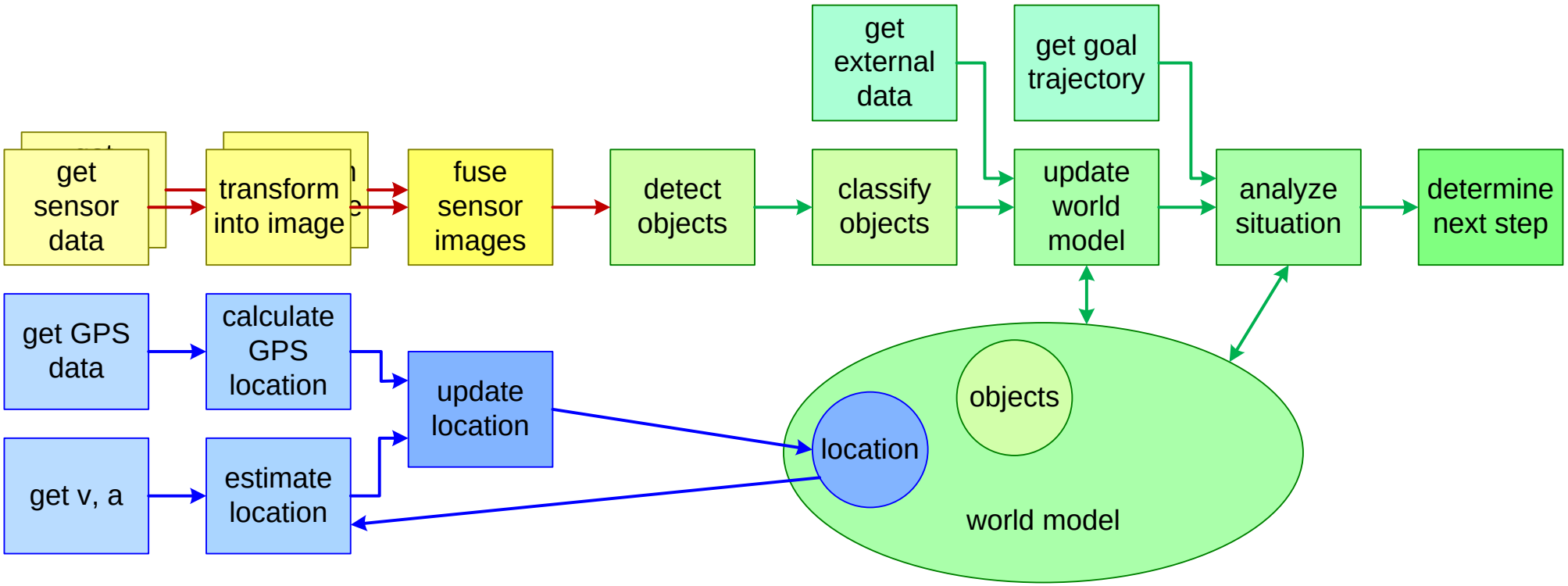
Swimming Lanes Concurrency and Interaction



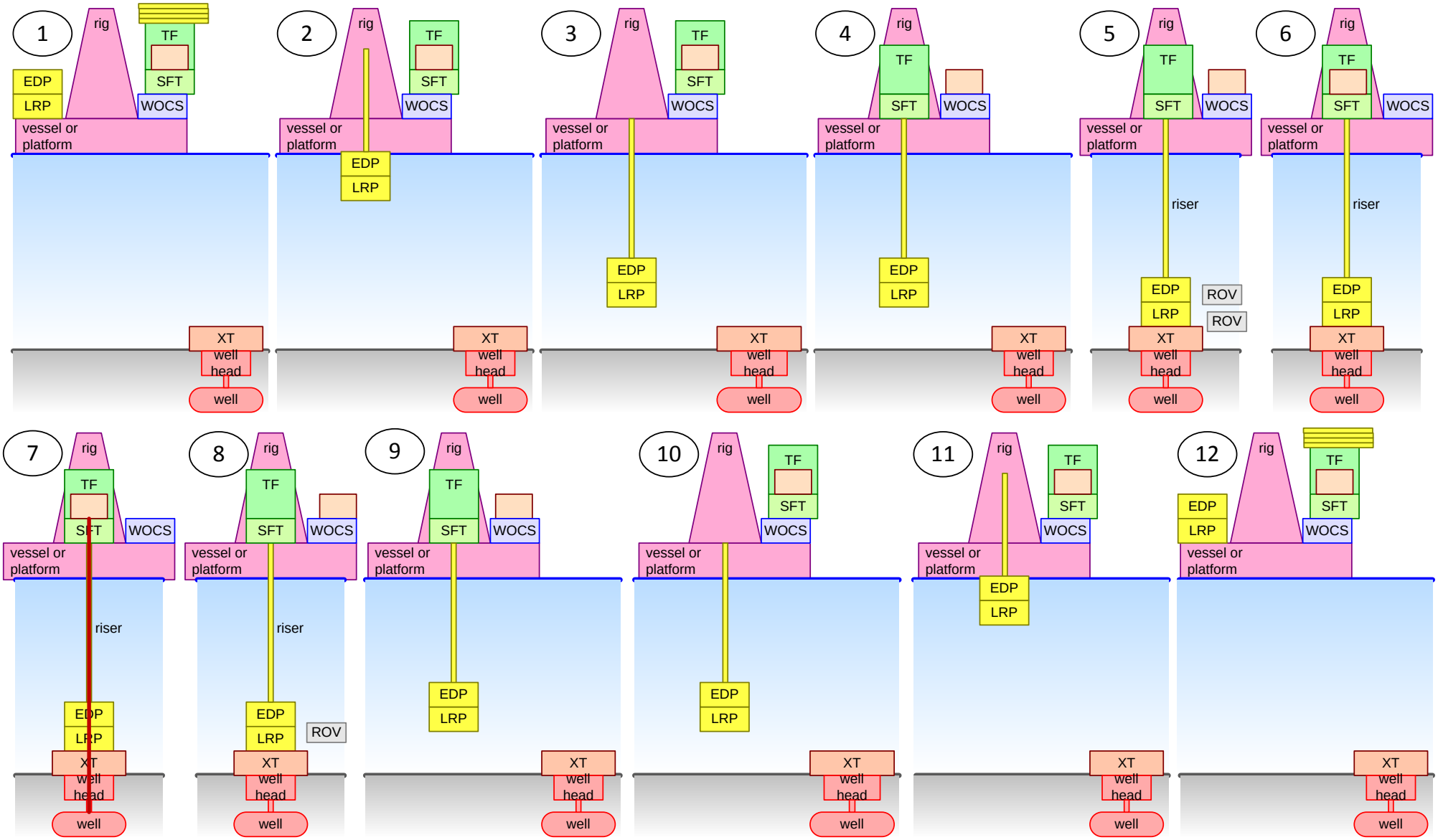
State Diagram



Example Functional Model of Information Flow



”Cartoon” Workflow



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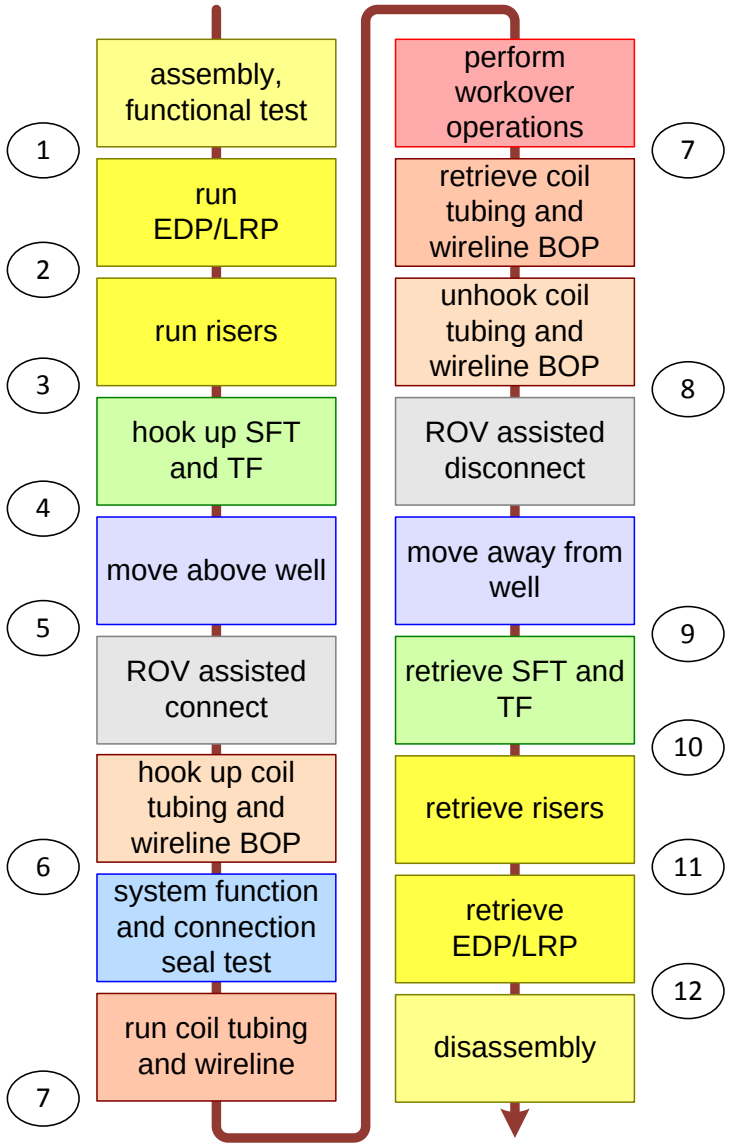
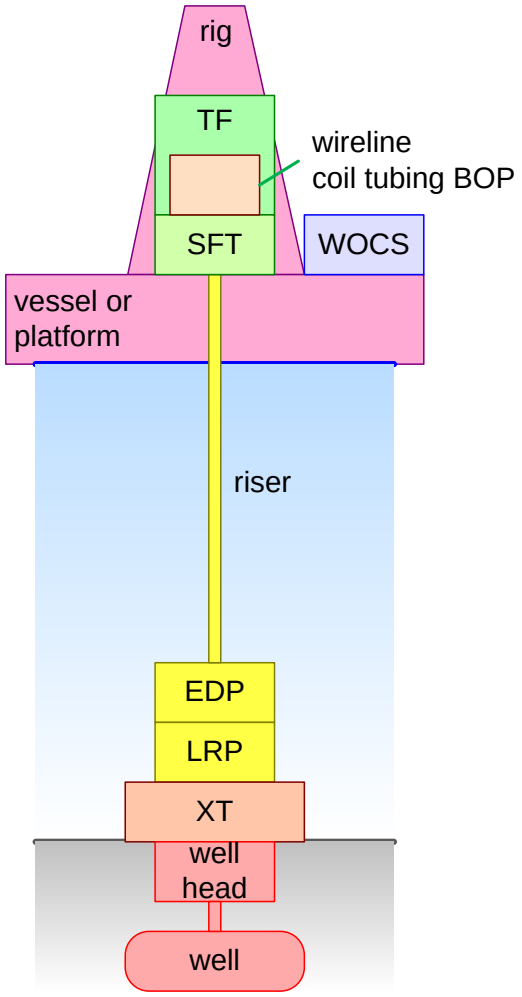
SSMEtypicalWorkoverOperationCartoon

Workflow as Functional Model





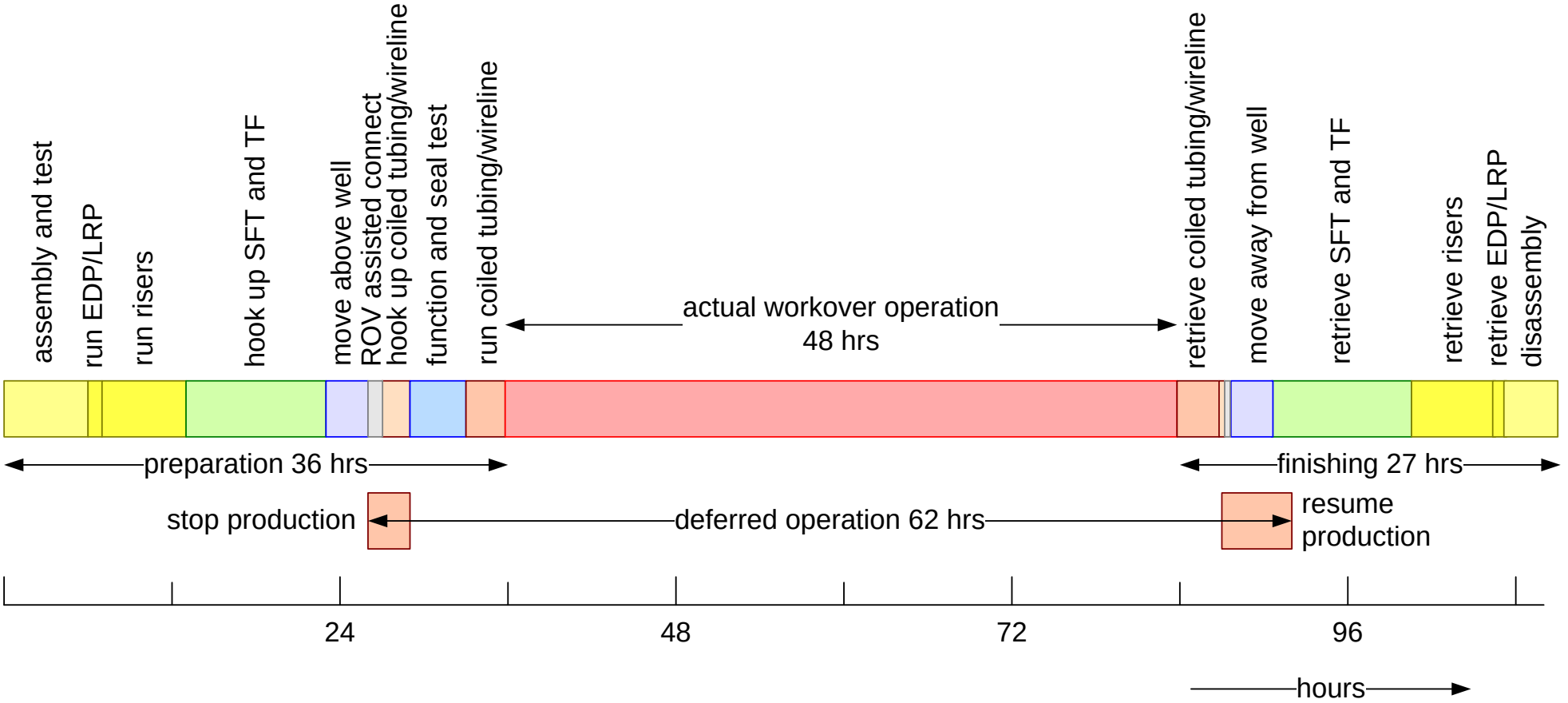
Workflow as Timeline

assumptions:

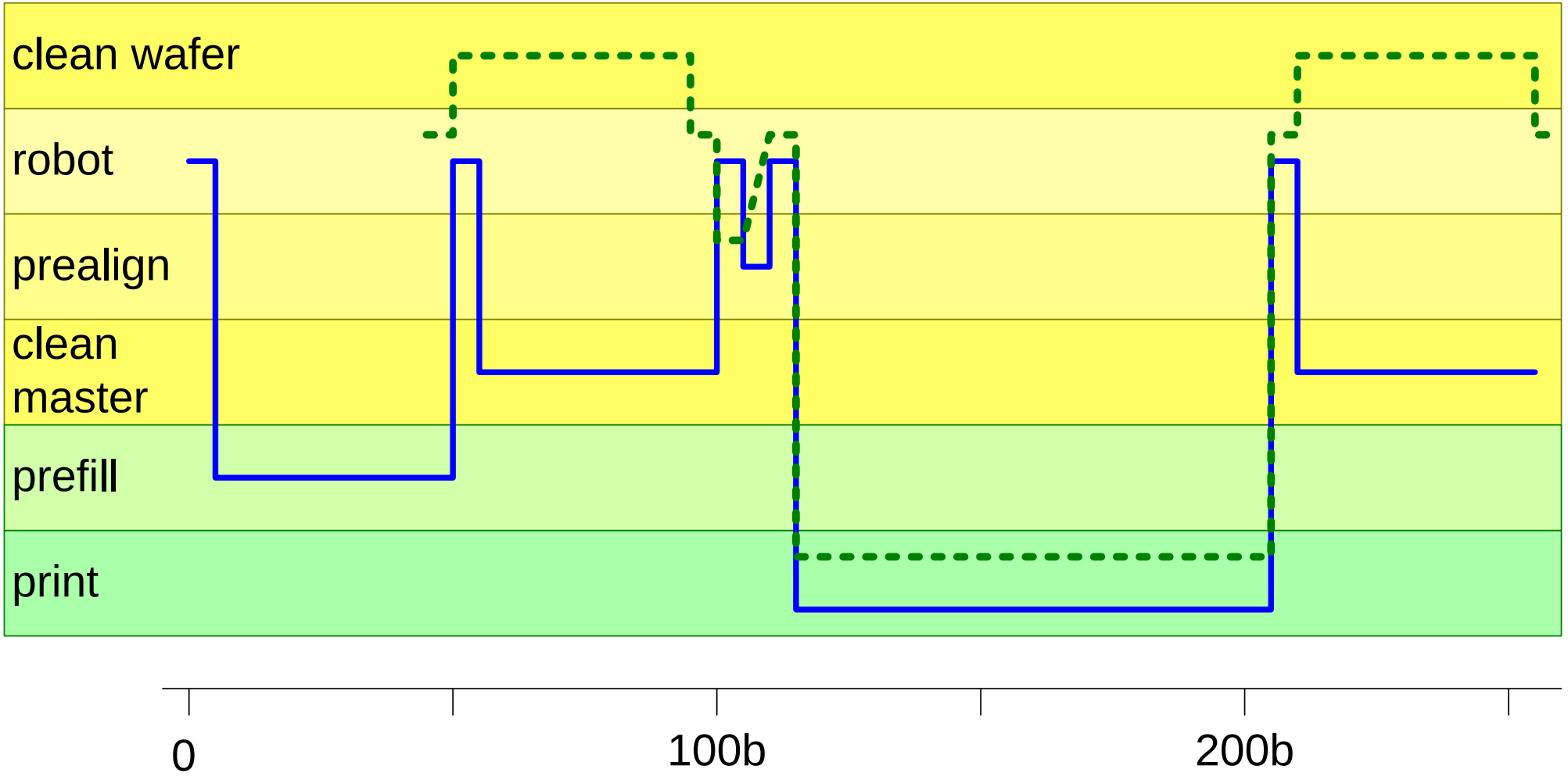
running and retrieving risers: 50m/hr

running and retrieving coiled tubing/wireline: 100m/hr

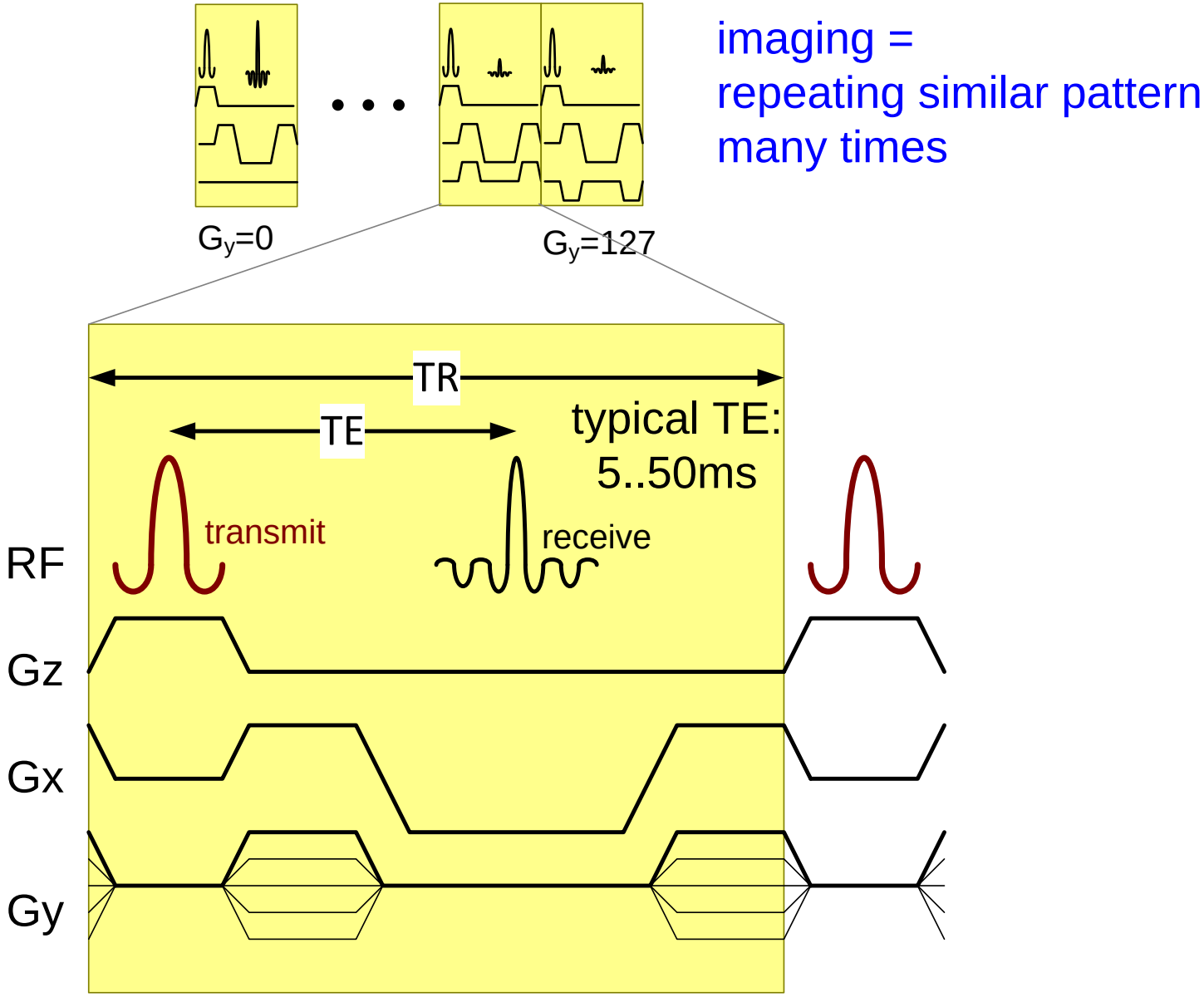
depth: 300m



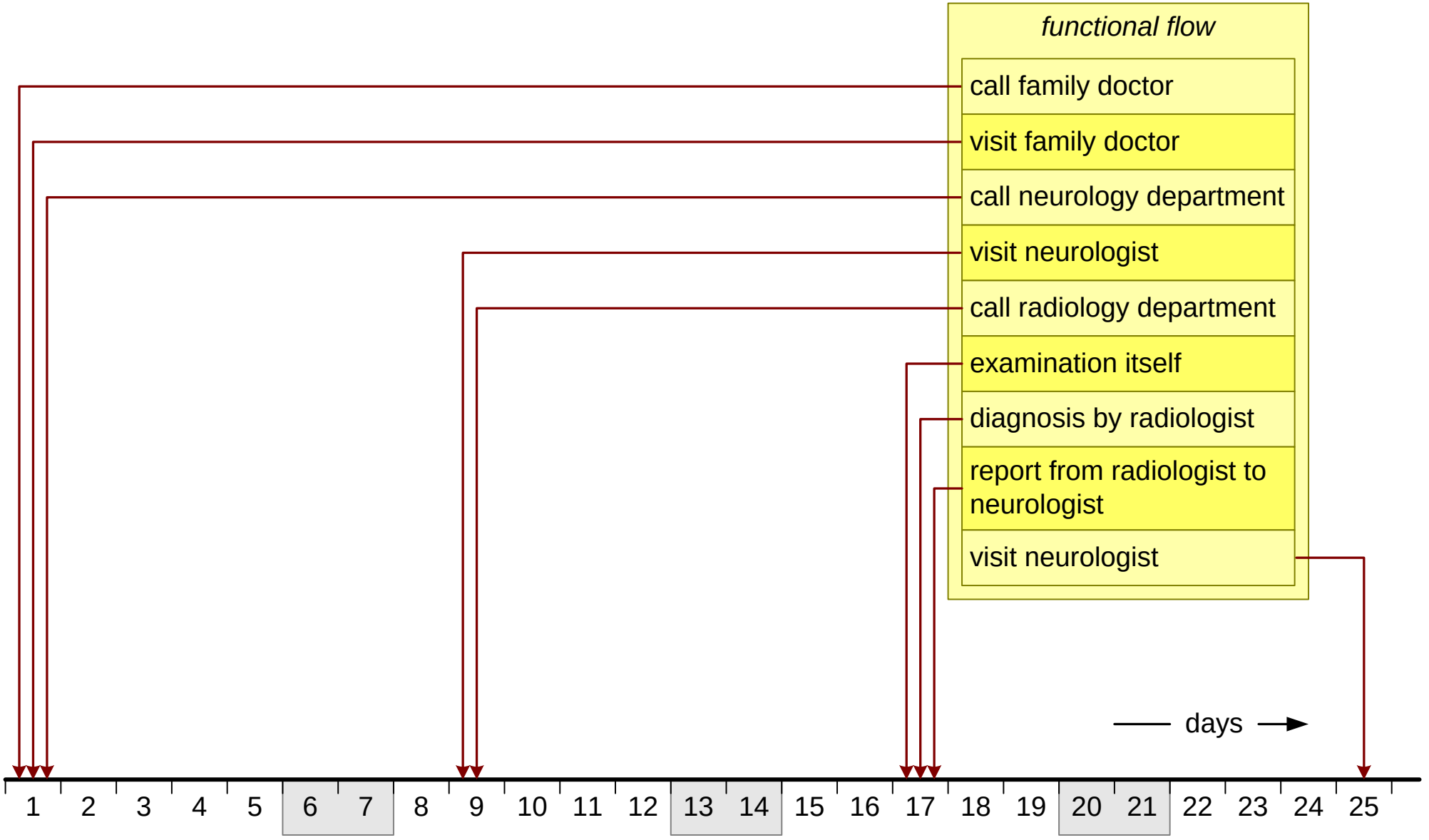
Swimming Lane Example



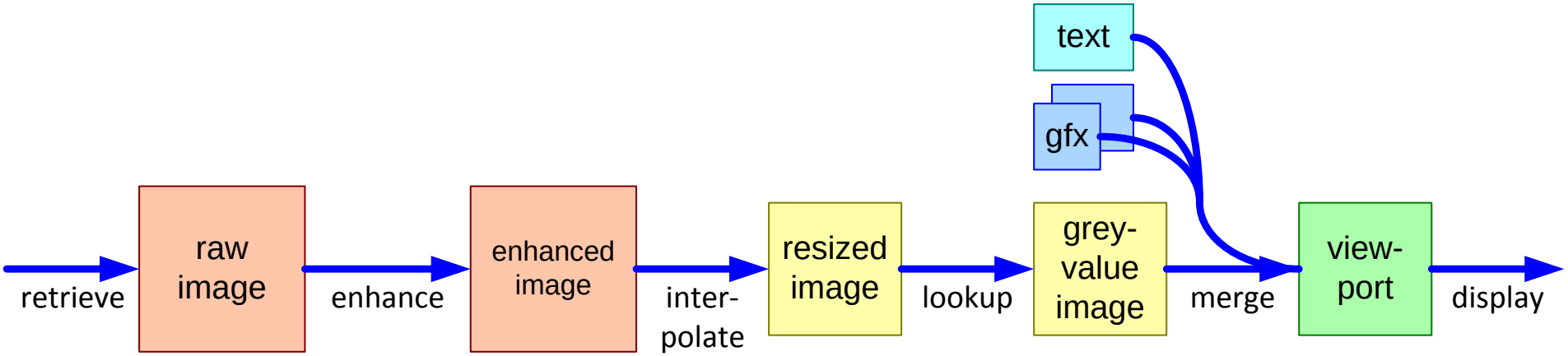
Example Signal Waveforms



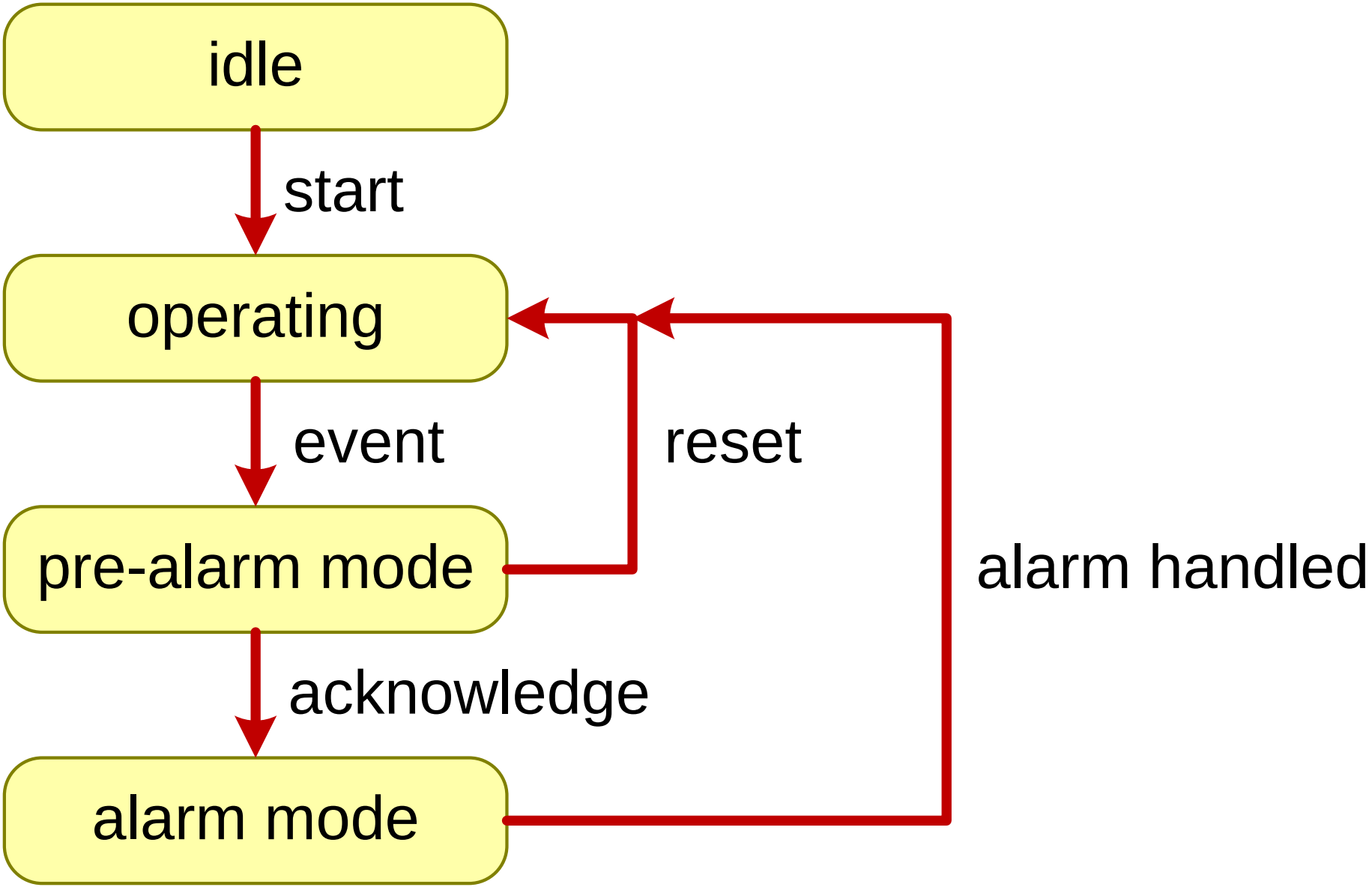
Example Time Line with Functional Model



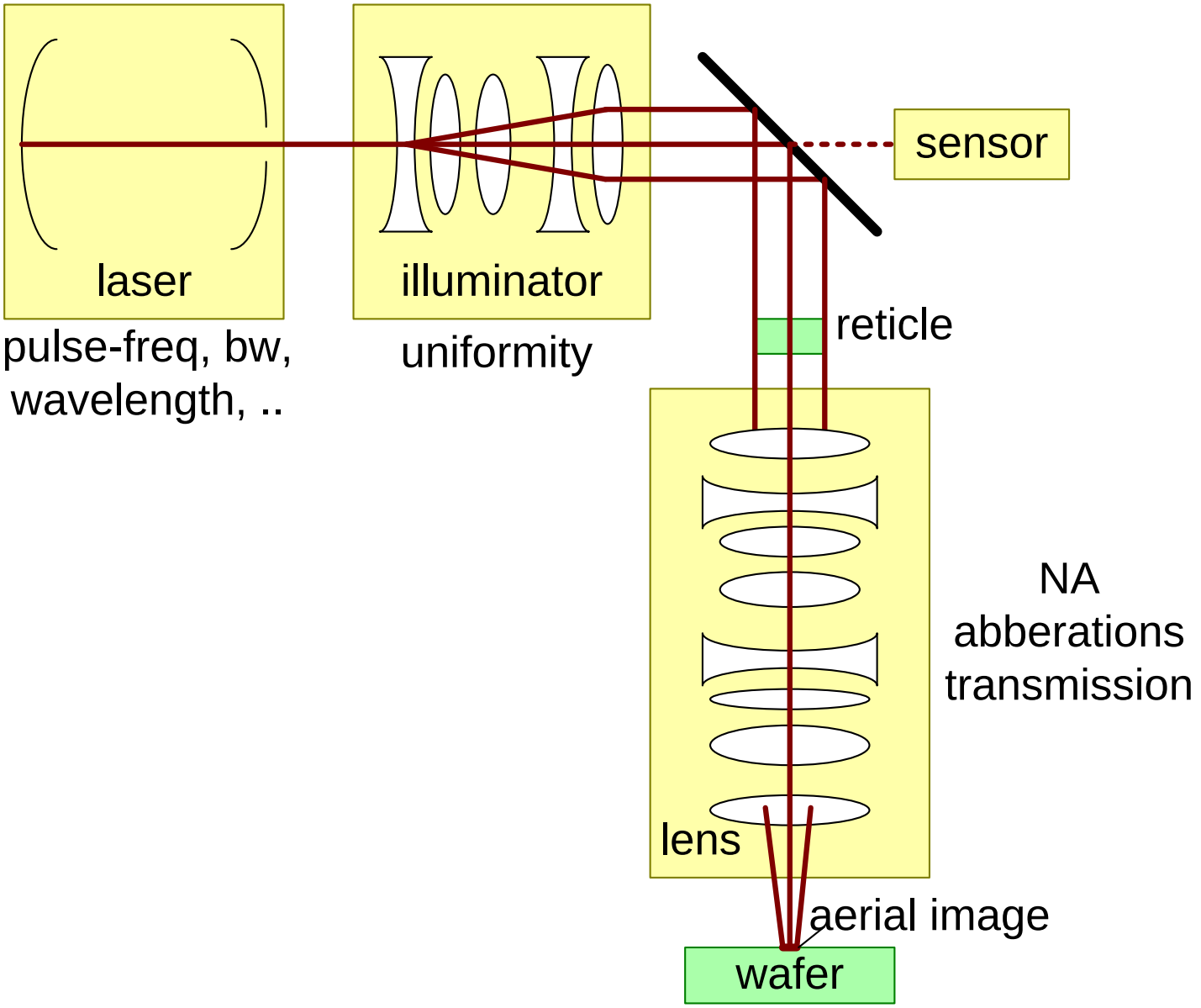
Information Centric Processing Diagram



Example State Diagram



Flow of Light (Physics)



Dynamic Behavior is Multi-Dimensional

How does the system work and operate?

Functions describe *what* rather than *how.*

Functions are *verbs*.

Input-Process-Output paradigm.

Multiple kinds of flows:

- physical (e.g. hydrocarbons, goods, energy)
- information (e.g. measurements, signals)
- control

Time, events, cause and effect

Concurrency, synchronization, communication

multi-dimensional information and dynamic behavior