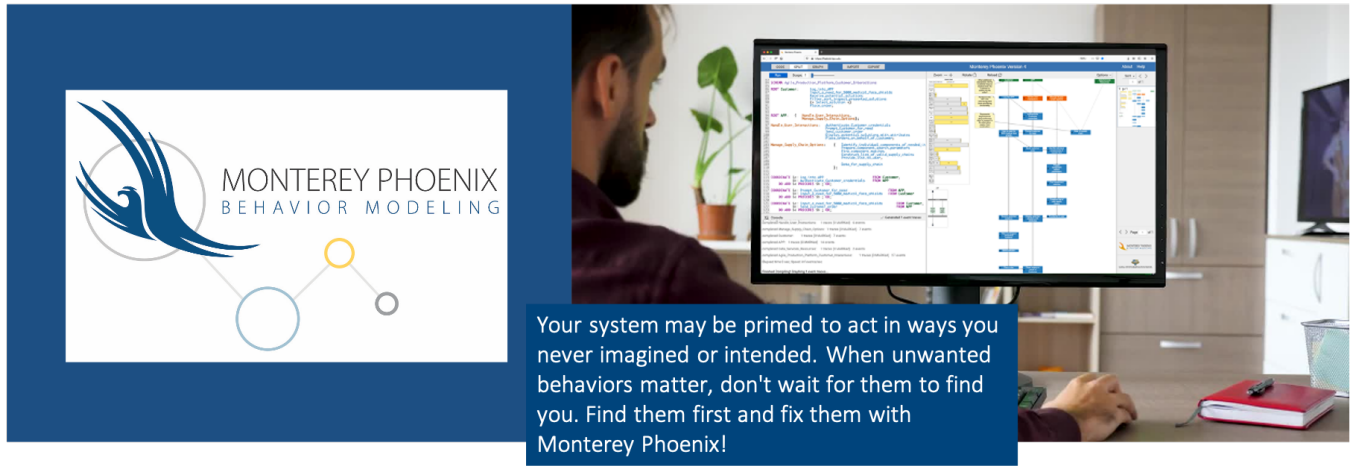


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Use Monterey Phoenix (MP) to reason about behaviors of your system. Using your knowledge. In your words.

Monterey Phoenix (MP) is a Navy-developed language, approach, and tool for modeling and reasoning about system and process behaviors.

Quick Links:

MP-Firebird Tool

(web-based, no installation)

MP-Gryphon Tool

(open source, locally installable)

Why MP?

System and process designs are based on the set of scenarios we conceive of in advance. That set gets orders of magnitude larger with MP assistance. Lightweight formal methods are employed to generate far more use case scenario variants - more quickly and with less human error - than can be done manually. You will discover requirements you did not know you had until seeing examples of them *not being met* in the MP event traces.

| | | |
|---|--|--|
| <h3>What It Is</h3> <ul style="list-style-type: none"> • A high-level, executable language for expressing complex behaviors using a simple event grammar • An approach for generating scope-complete¹ sets of behavior scenarios to inform what behaviors are possible / impossible based on a given design • Supported by open-source automated tools that generate behavior scenarios as event traces along with global views across all event traces • ¹Exhaustive up to a user-defined scope limit (lightweight formal method) • Easy to use for technical and non-technical professionals and students from diverse academic backgrounds | <h3>What It Does</h3> <ul style="list-style-type: none"> • Helps users reason about intended behaviors, realize their own assumptions / turn them into formal requirements, and expose and control potentially emergent system or process behaviors • Improves and extends behavior modeling capabilities of other tools with scope-complete scenario generation enabled by lightweight formal methods • Generates views of the system structure and architecture from well-defined behavior models • Characterizes events with attributes such as probability, timing (intervals or duration), likelihood, impact, cost, weight, etc. • Helps users verify and validate designs described in notations like UML and SysML and frameworks like the Department of Defense Architecture Framework (DoDAF) • Annotates event traces automatically based on user-defined rules • Exhaustive model checking for system or process models having no event iteration • Facilitates modeling and simulation of systems of systems (SoS) across many application domains and enables exposure and control of associated emergent behaviors | <h3>Who It Is For</h3> <ul style="list-style-type: none"> • Operational architects • System architects • Business process architects • Security analysts • Behavior scientists and analysts • Systems scientists • Educators who teach critical thinking • Students or professionals from any background seeking to improve critical thinking • Formal methods practitioners • MBSE practitioners • Test planners • Software developers |
| <h3>What It Is Not</h3> <ul style="list-style-type: none"> • NOT a heavyweight formal method • NOT a substitute for tools that model concepts other than behavior (e.g., requirements traceability, wiring of physical blocks, etc.) • NOT a tool that requires specialized training or technical background | <h3>What It Does Not Do</h3> <ul style="list-style-type: none"> • Physics-based modeling • Theorem proving • Exhaustive model checking for system or process models with iterating events at an unlimited scope | <h3>Uses</h3> <p>Primary: Ask and answer questions concerning intended behaviors for a given event trace, or across all generated event traces</p> <ul style="list-style-type: none"> • Assumptions about behavior logic • Risk analysis / estimation • Event timing • Resource utilization / real time systems modeling • Cost analysis / estimation • Pattern analysis <p>Secondary: Generate documentation of system or process architecture to facilitate communication and understanding</p> <ul style="list-style-type: none"> • Event trace views (Sequence diagrams) • Global views such as Activity diagrams, Component diagrams, State transition diagrams, Gantt Charts, Bar Charts, Histograms, Tables and Reports |

Announcements

24 Feb 2021

Read about MP in the NPS news article entitled "[Intuitive, NPS-Developed Behavior Analysis Tool Now Accessible to the Public.](#)"

15 Apr 2020

MP version 4 has been deployed at <https://firebird.nps.edu>.

MP version 3.5 remains available at <https://3.firebird.nps.edu>.

22 Aug 2019

MP version 4 has been deployed at <https://4.firebird.nps.edu>.

1 Nov 2018

The draft manual for MP version 4.0 has been made available on the [Documentation](#) page.

6 Sept 2018

MP version 3.5 has been deployed at <https://firebird.nps.edu>.

20 Jul 2018

MP version 3 has been deployed at <https://firebird.nps.edu>.

18 Jul 2018

Read about MP in the NPS news article entitled "[NPS-Developed Software Detects System Design Errors Early.](#)"



Monterey Phoenix (MP) was developed at the U.S. Navy [Naval Postgraduate School \(NPS\)](#) by [Dr. Mikhail Auguston](#) in the [Department of Computer Sciences](#). The engine behind MP is the result of decades of research and development. The the web-based user interface MP-Firebird tool has been publicly available since 2015, and the locally installable MP-Gryphon tool was open sourced in 2020.

Material contained herein is made available for the purpose of peer review and discussion and does not necessarily reflect the views of the Department of the Navy or the Department of Defense.