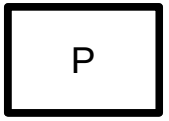
DEBLOAT

WASP Expedition

Apollo's computer "eventually required about **145,000 lines of code** in all, compared with about **62 million** lines of code required today to operate Facebook and more than **two billion** lines of code for Google," according to the *Journal*.

iPhone with 4 gigabytes of RAM (that's 34,359,738,368 bits) has more than **1 million times more memory** than the AGC, and a 512GB iPhone has **7 million times more memory**.

https://www.wsj.com/articles/apollo-11-had-a-hidden-hero-software-11563153001
https://fedtechmagazine.com/article/2019/07/tech-behind-apollo-11s-guidance-computer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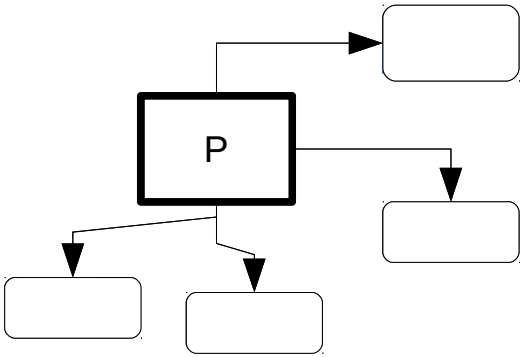
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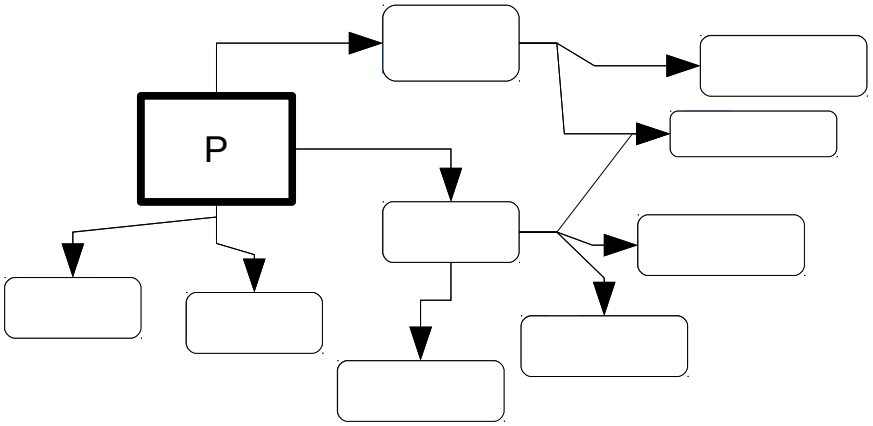
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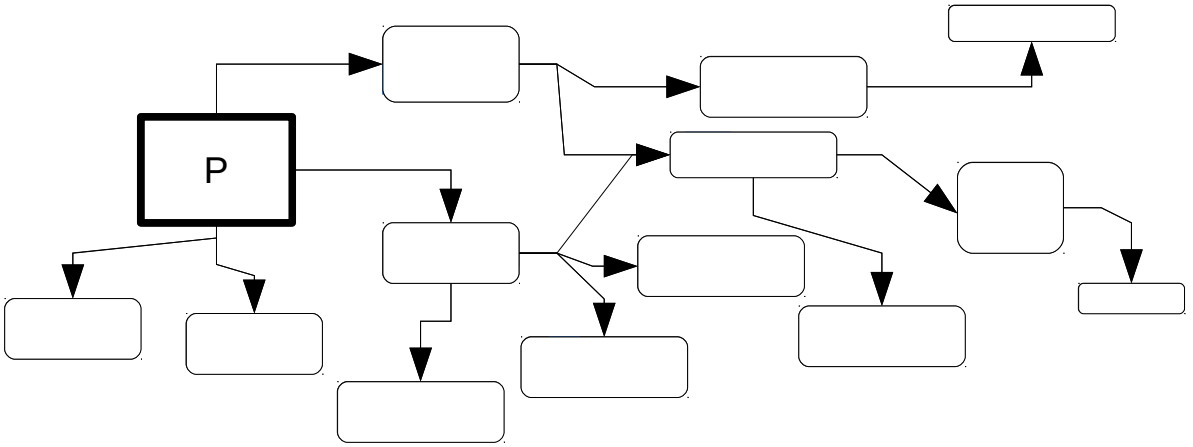
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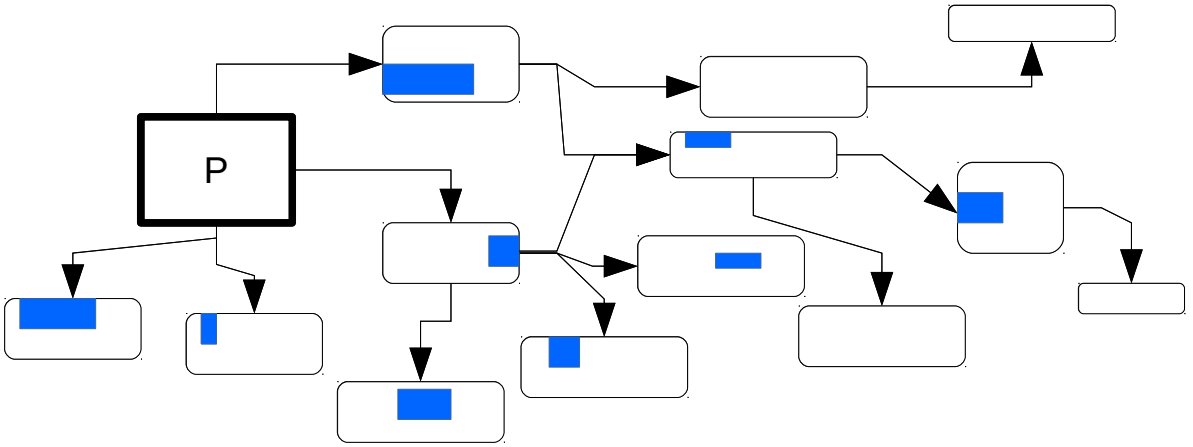
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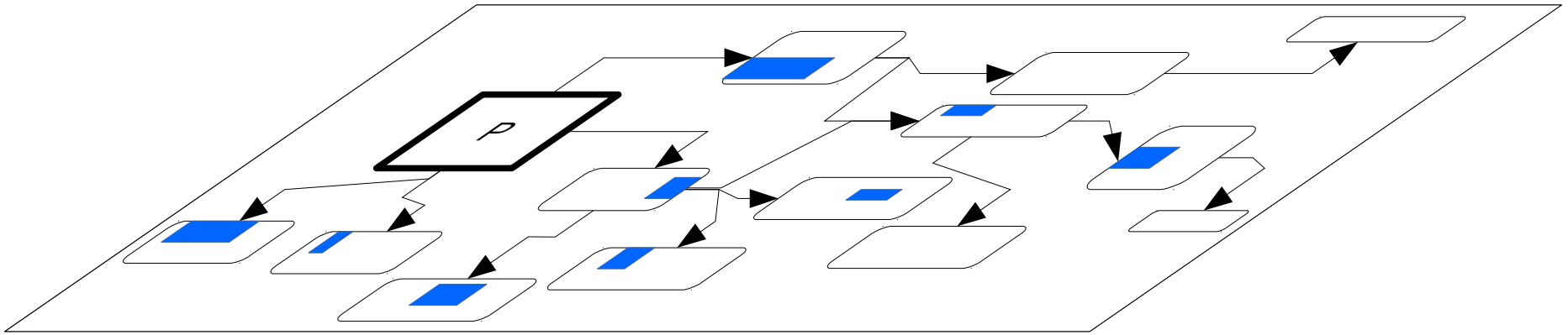
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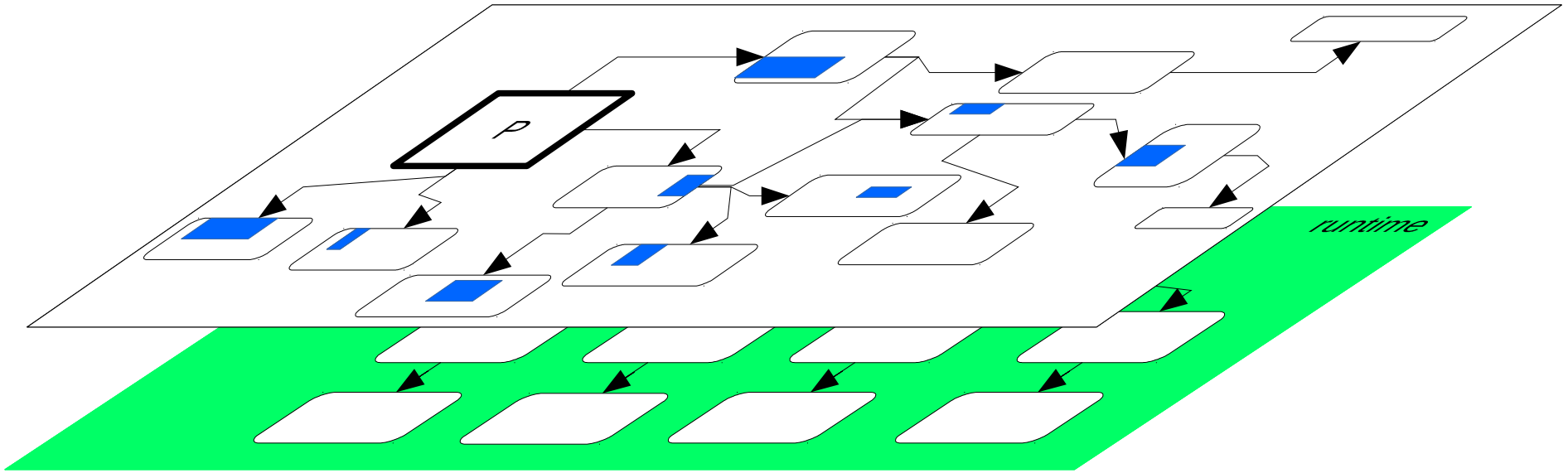
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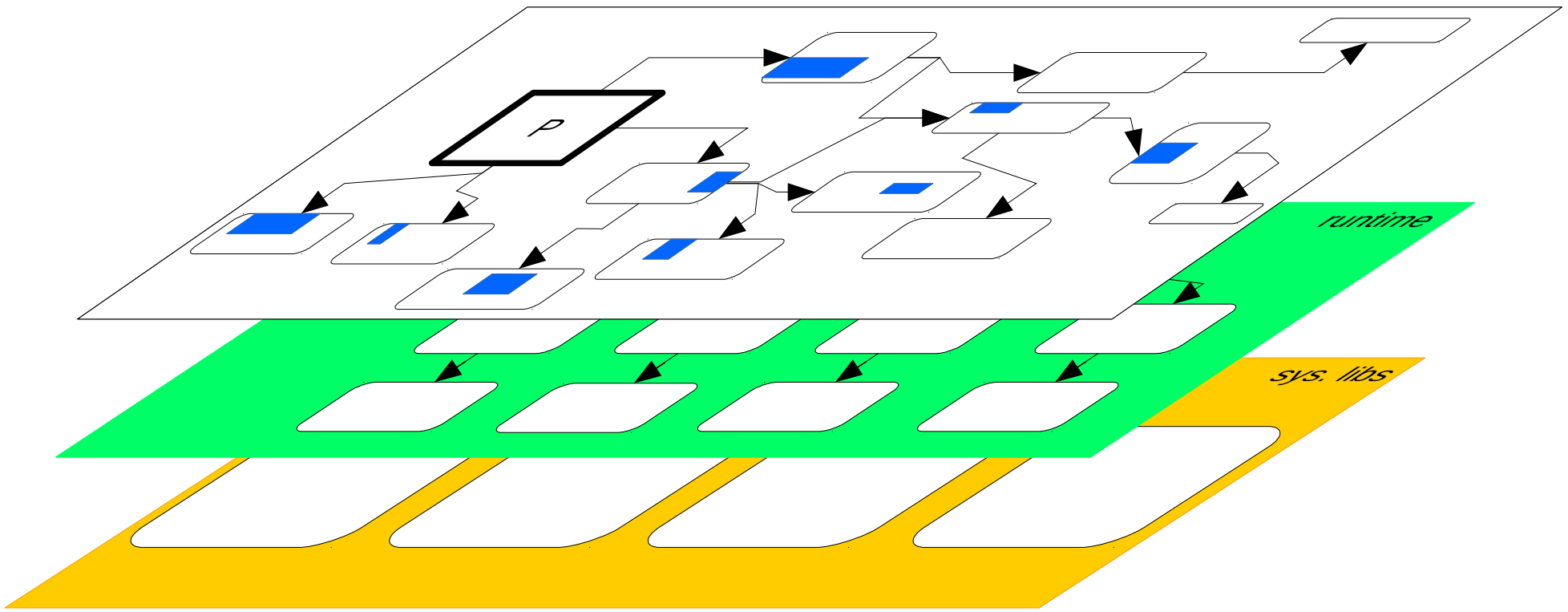
runtime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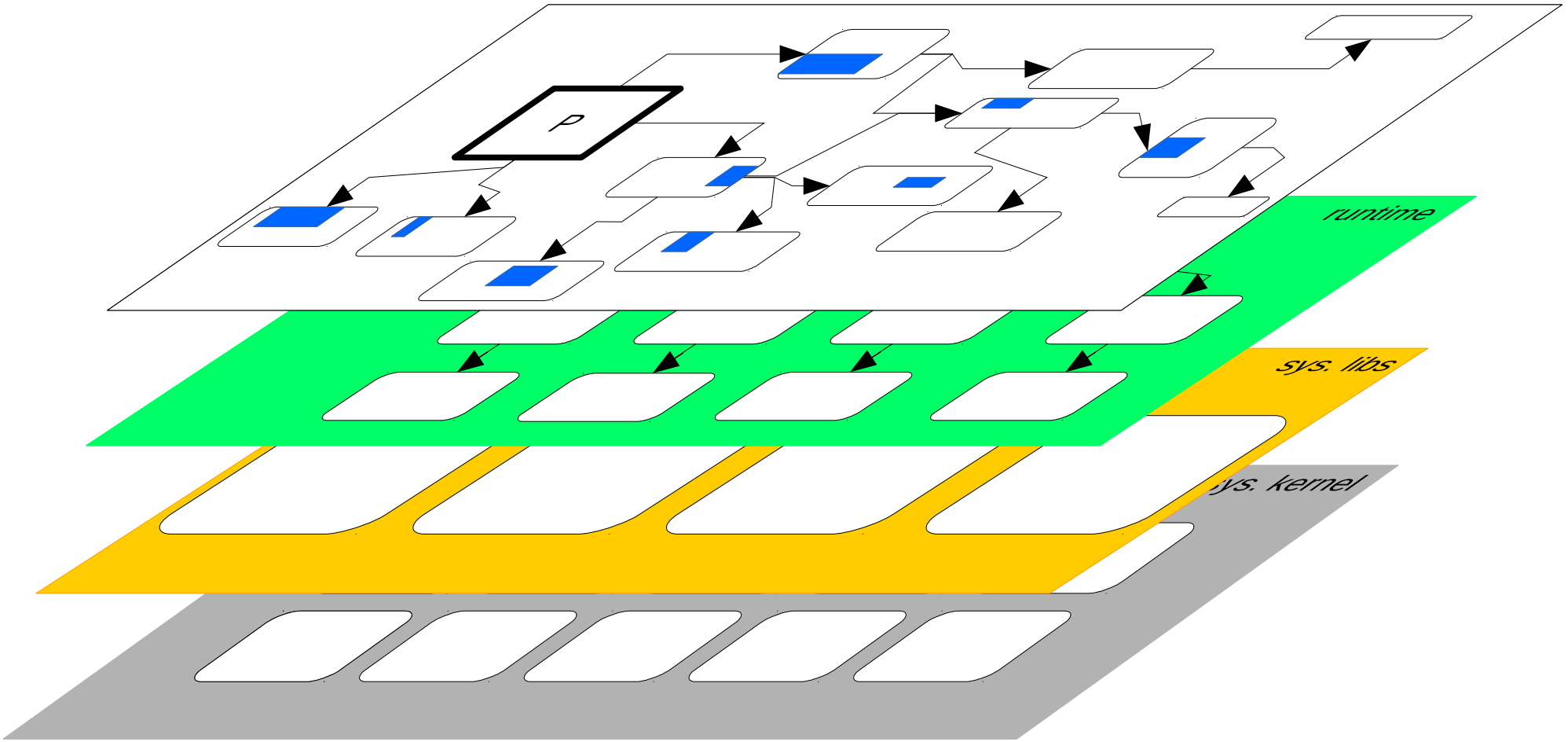
runtime
sys. libs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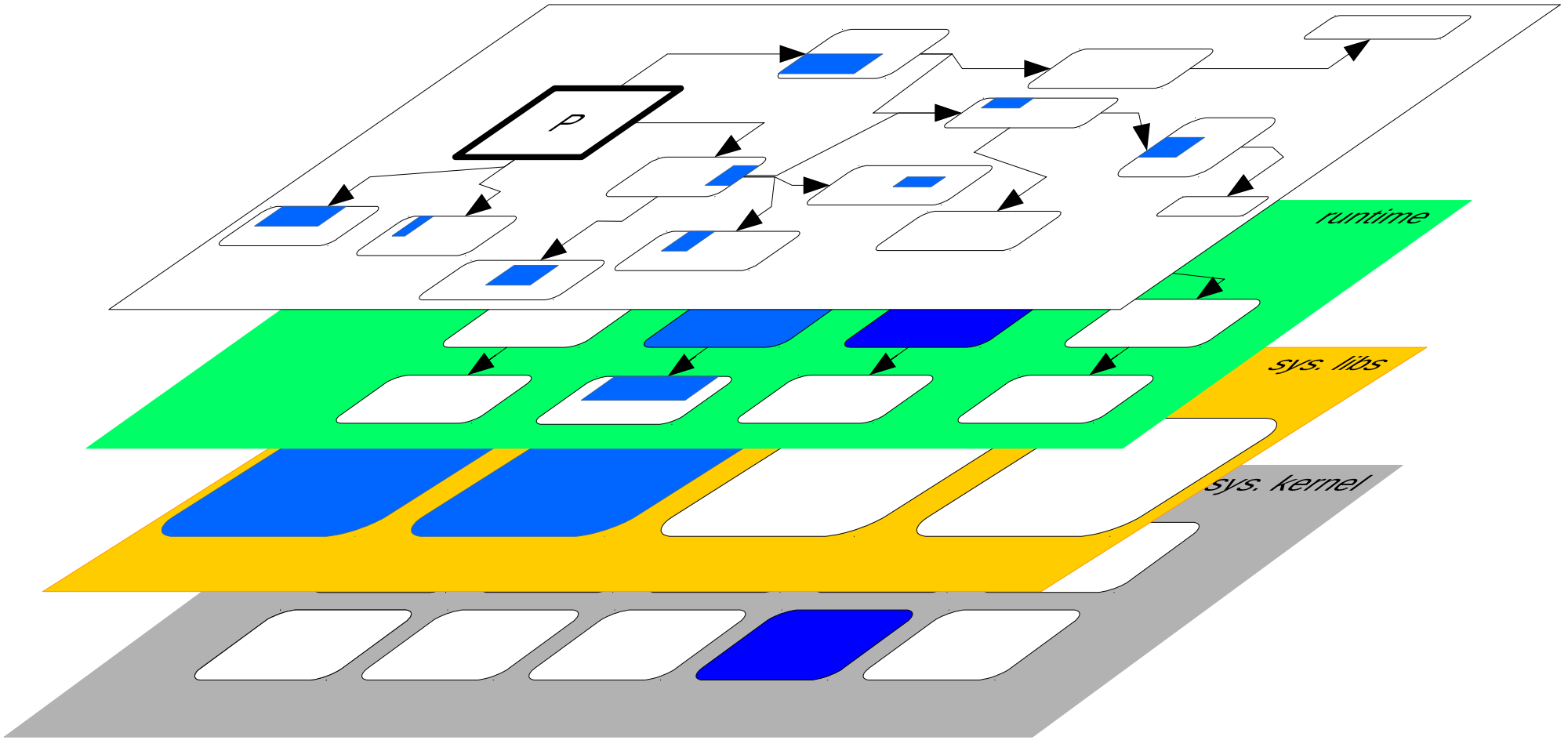
runtime
sys. libs
sys. kernel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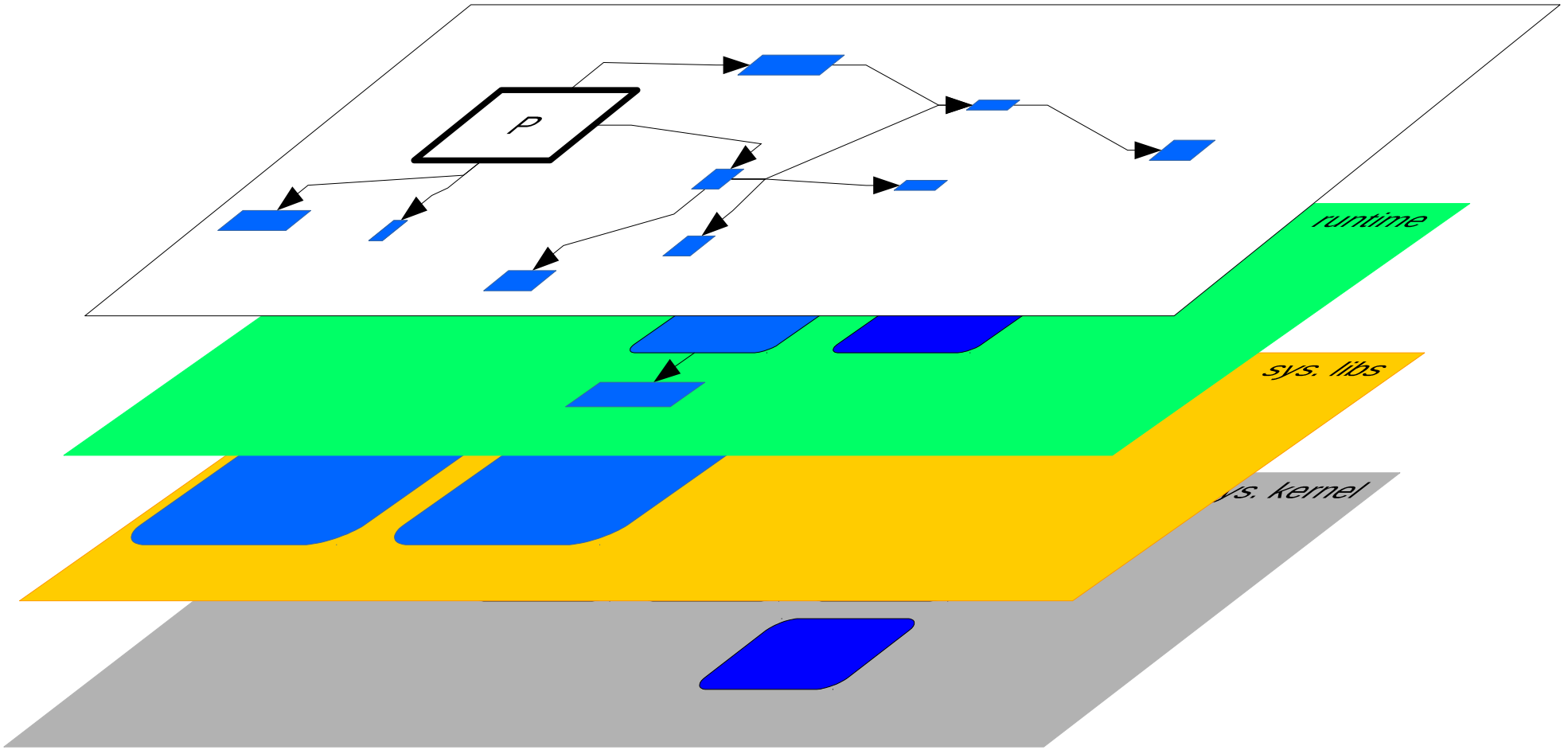
runtime
sys. libs
sys. kernel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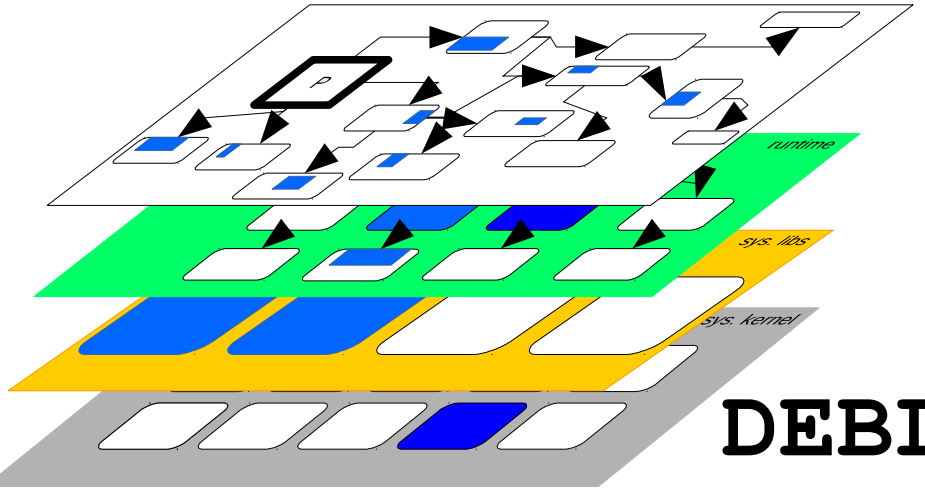

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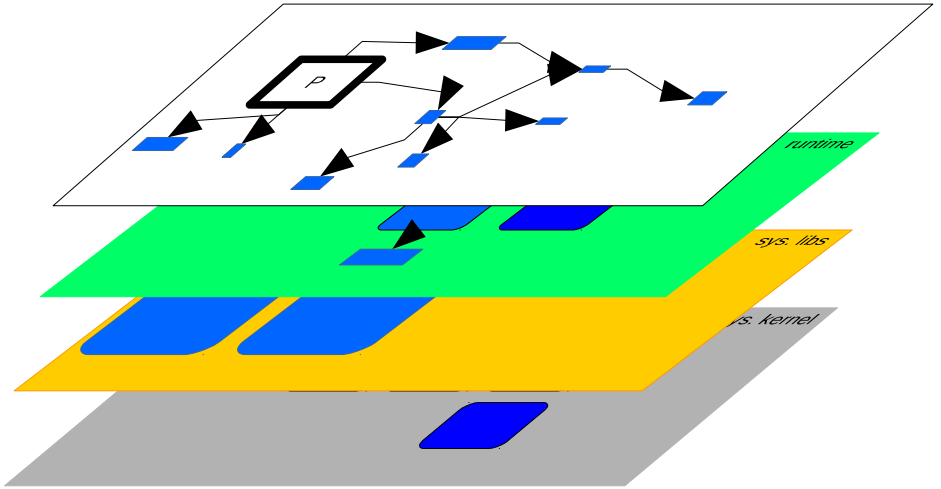

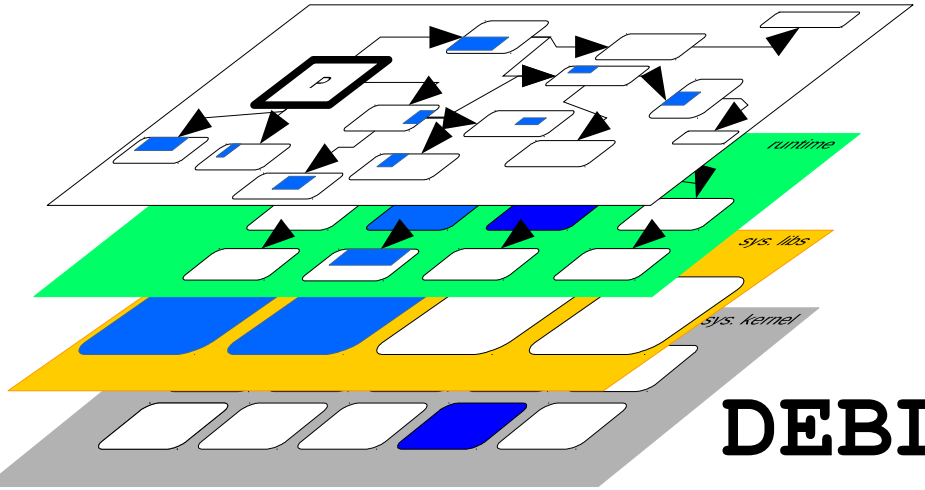

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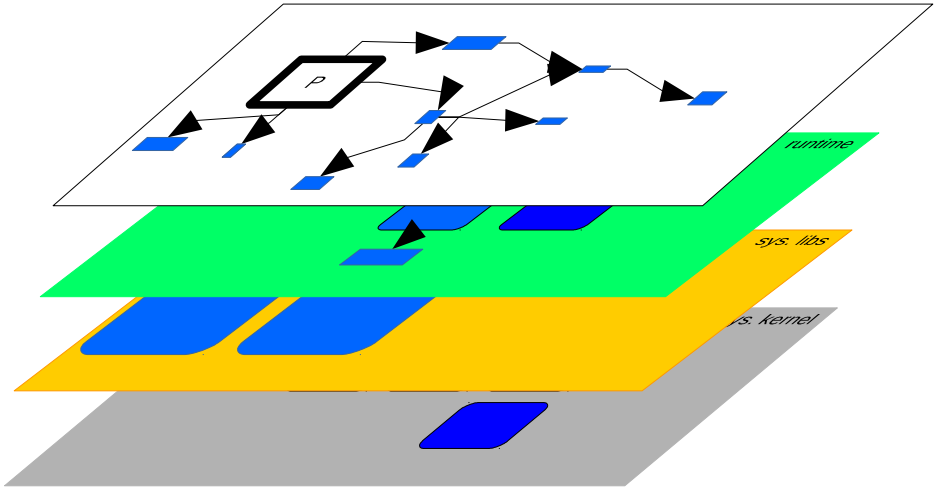
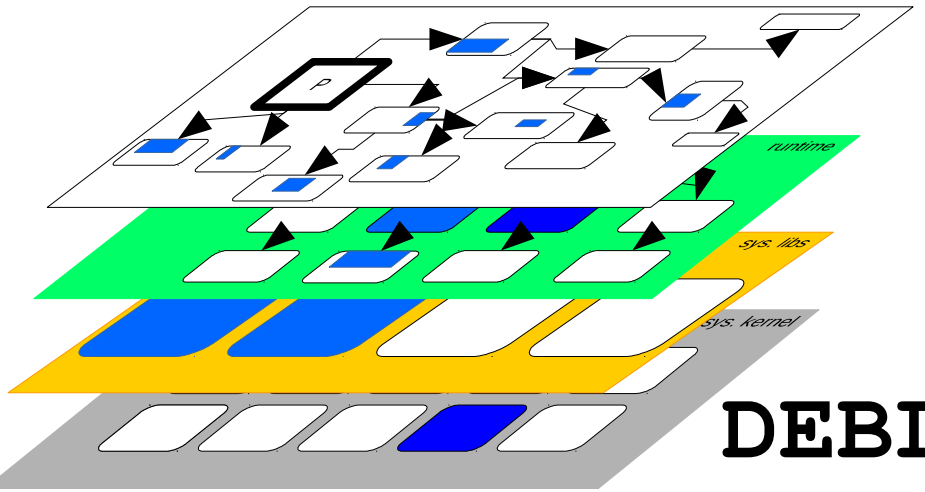


- Motivation
  - Simplify maintenance
  - Improve security
  - Reduce resources



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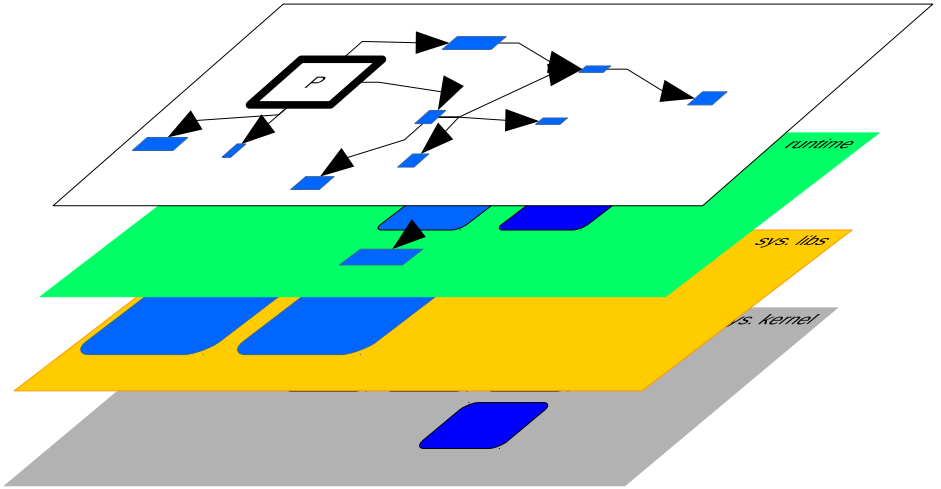

- Motivation
  - Simplify maintenance
  - Improve security
  - Reduce resources
- Challenges
  - Automatically detect bloat
  - Remove bloat and keep global correctness
  - Debloat multiple software layers

DEBLOAT

- 2-year WASP expedition
  - KTH - UMU collaboration
  - WASP Software and Cloud cluster
- Complementary expertises
  - Strong CS backaground (languages and systems)
  - KTH software technology
  - UMU systems level analysis
- Early results
  - 1 publication in 2019
  - Remove useless libraries in 18 open source projects