

Insurance

Data

Science

PartnerRe

**...whatever remains, however improbable,
must be a bug**

Patrick Hogan

PartnerRe

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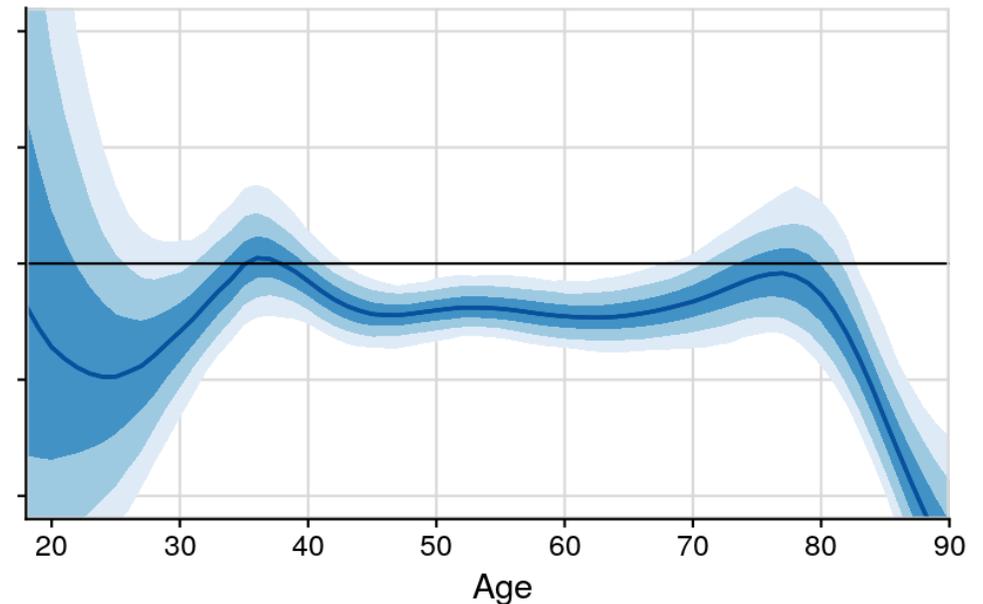
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New in-house mortality benchmark

More accurate actuarial tables

- Powerful new Bayesian approach 🦹
- But full model takes ~17 days to train locally 🤔
- Use the Swiss National Supercomputer cluster 🚀

Model segment vs industry rates



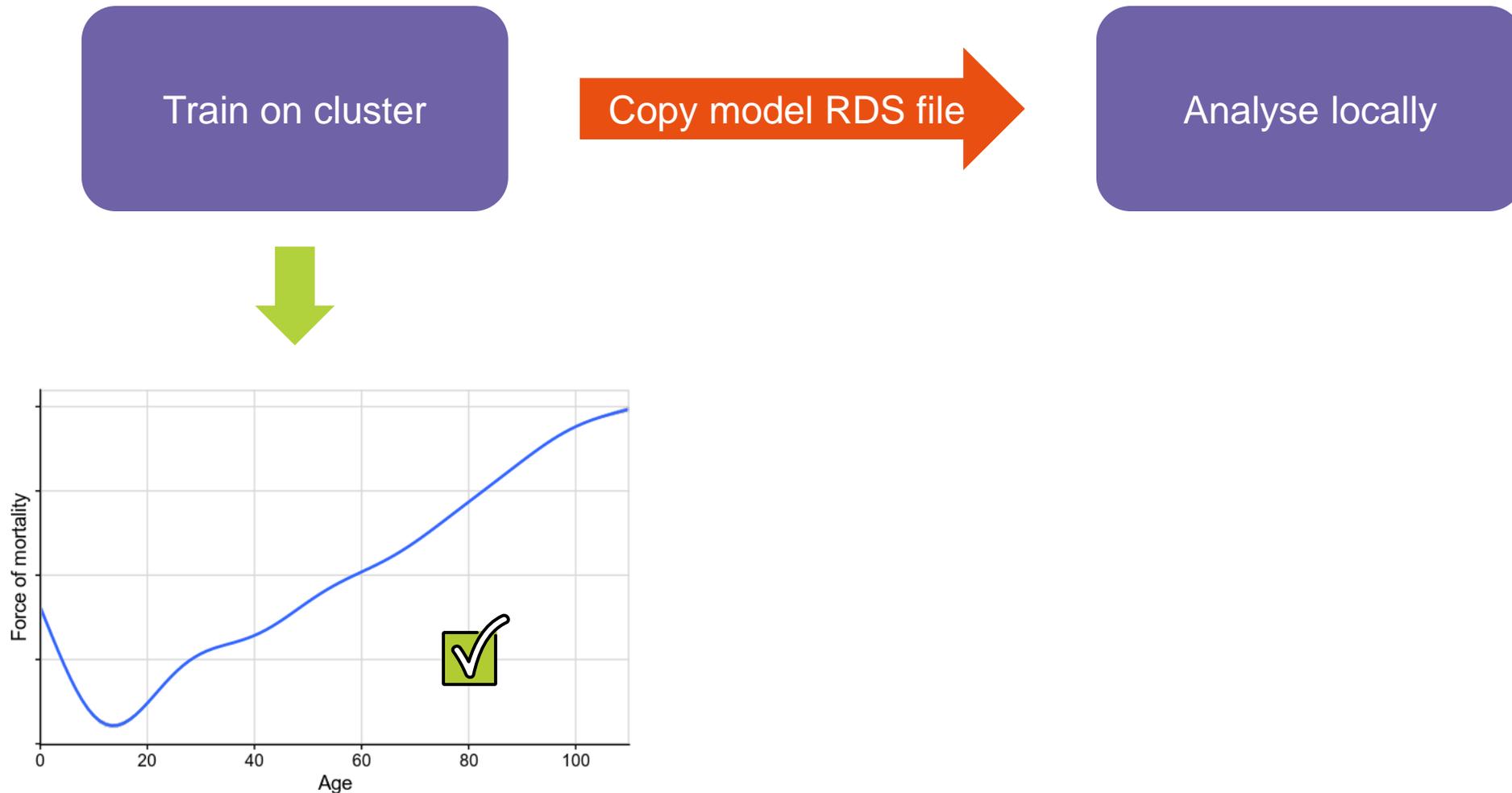
RDS files are portable, right?

Minimal reproducible example



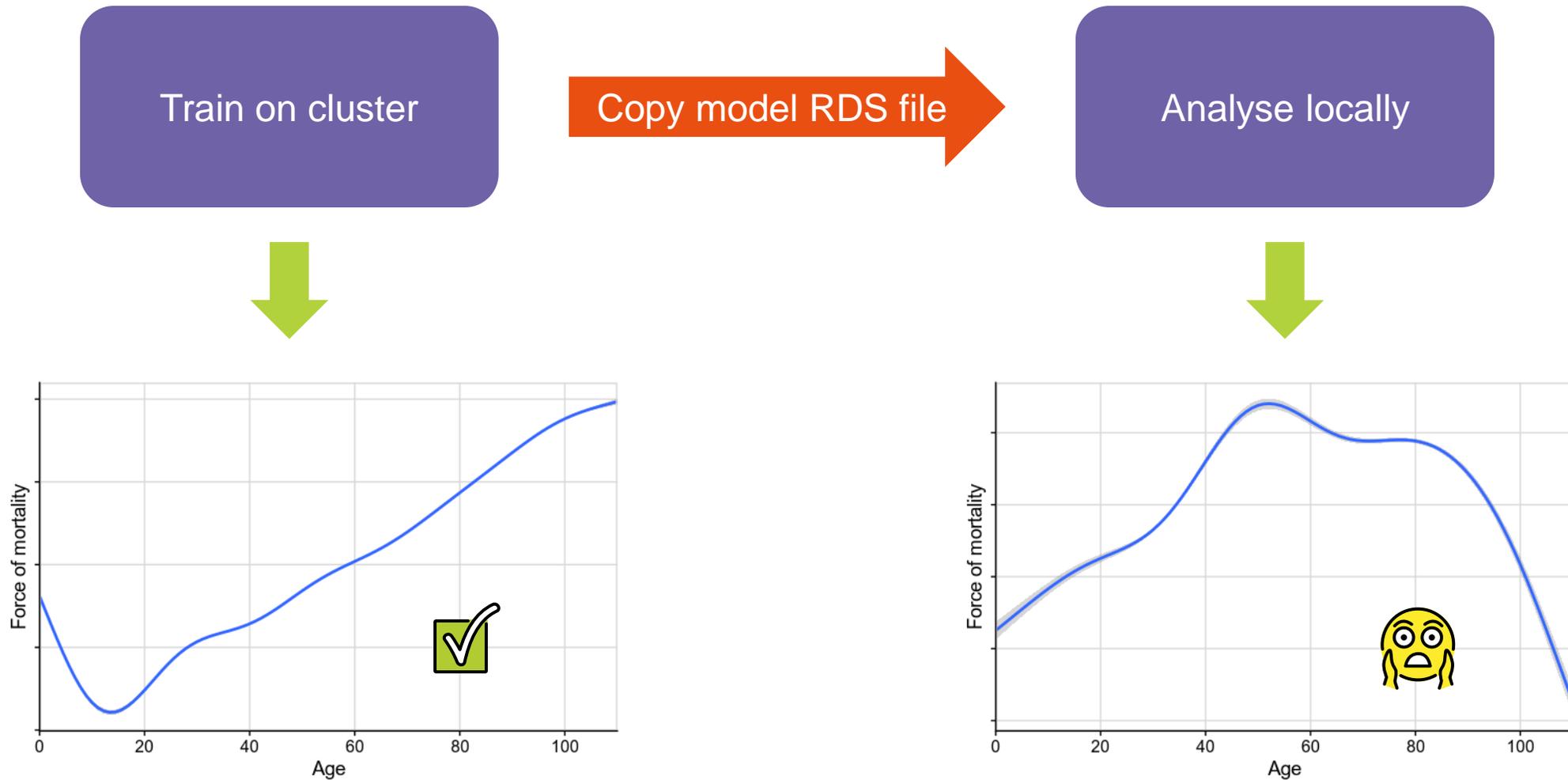
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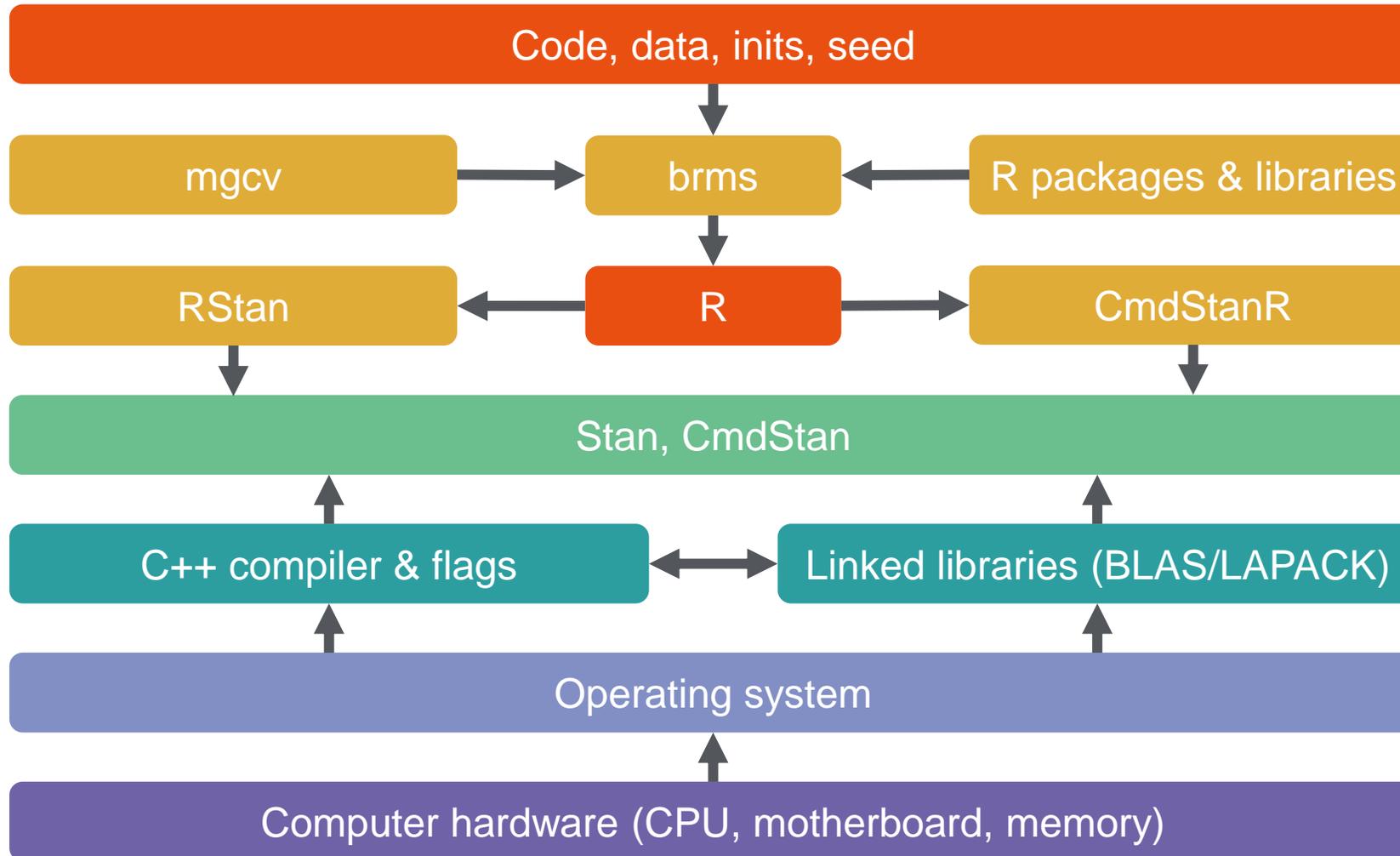
Minimal reproducible example



These plots are not from our new benchmark, which was trained locally and therefore unaffected by this issue.

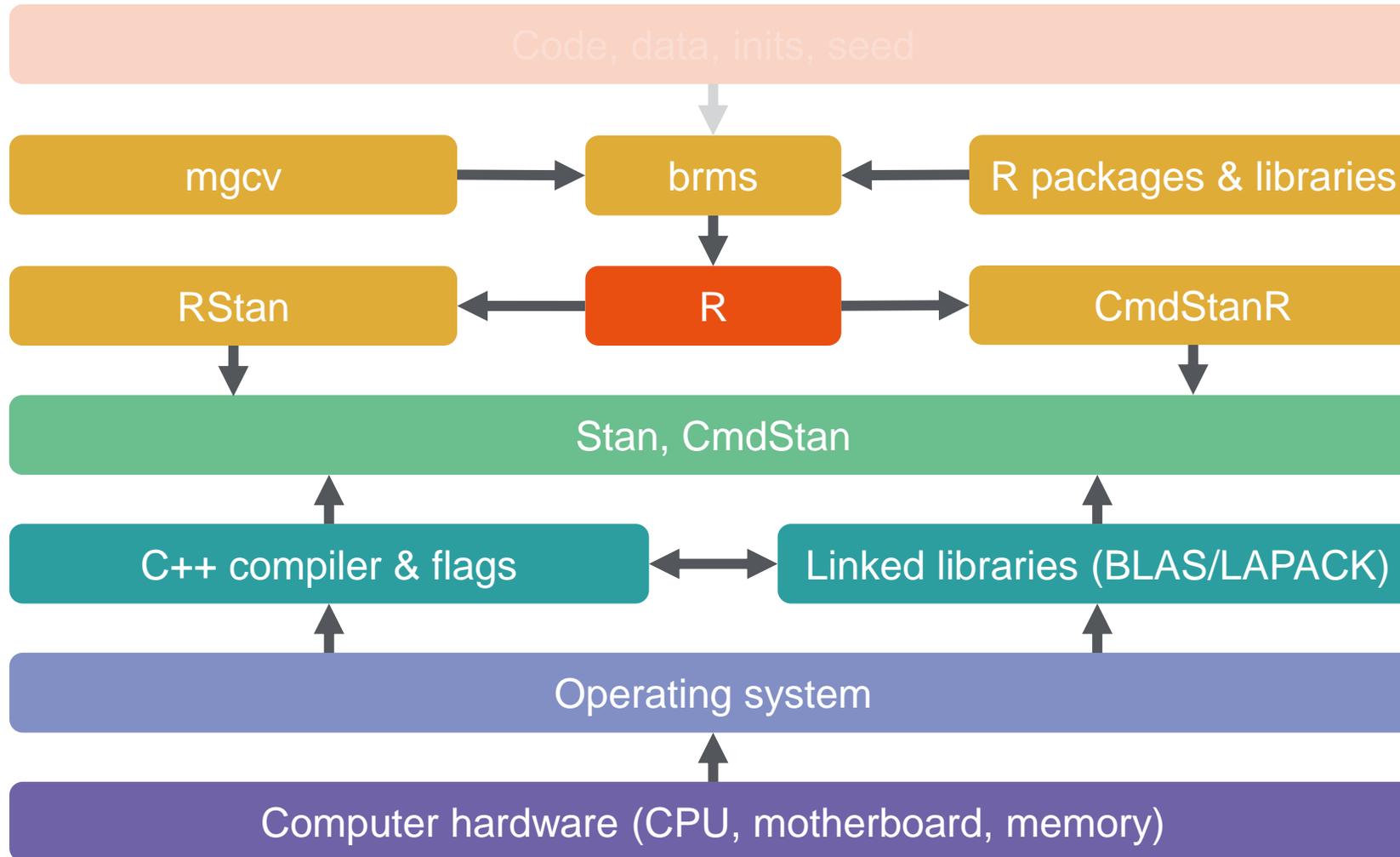
Open-source modelling

A multitude of interacting elements



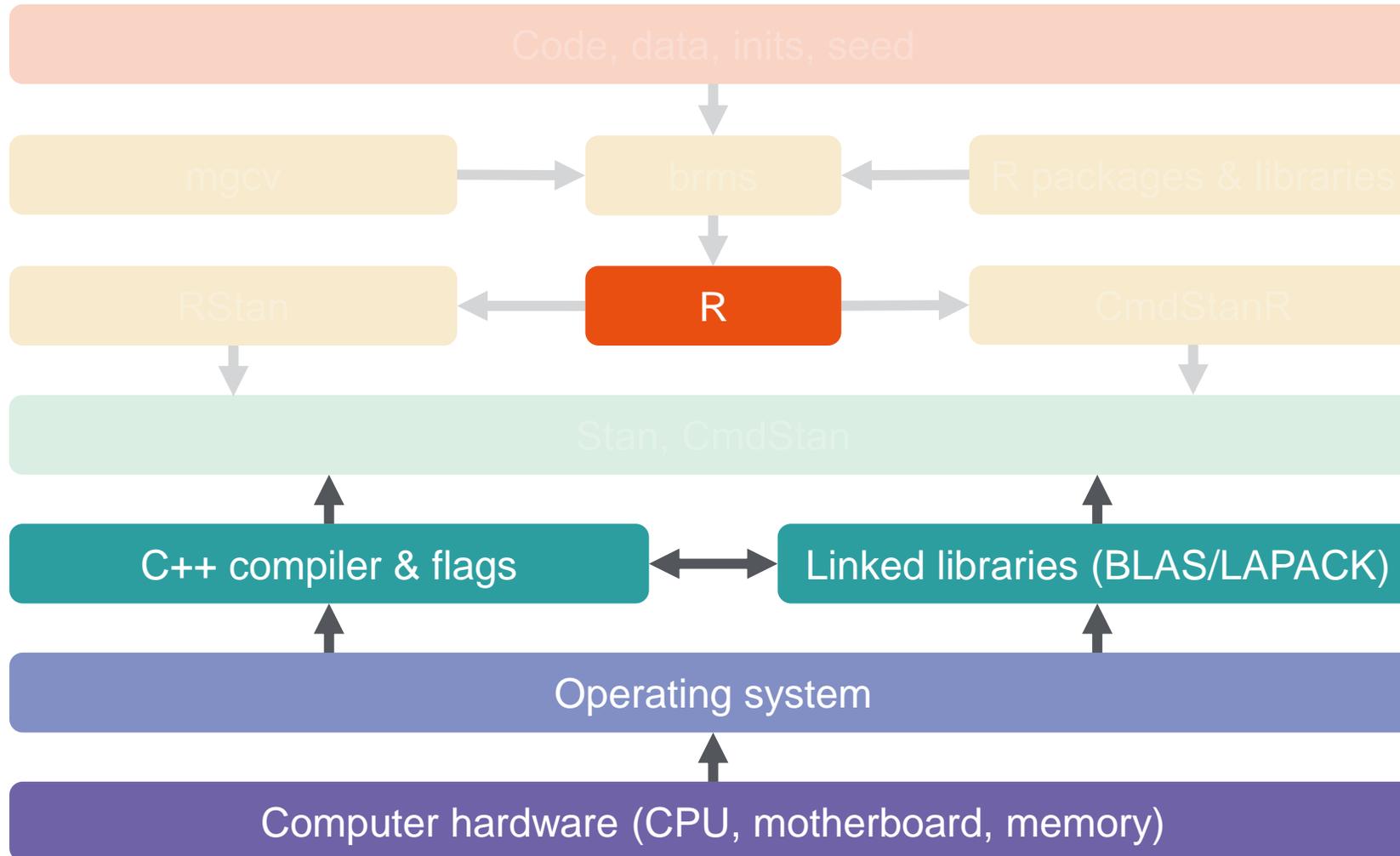
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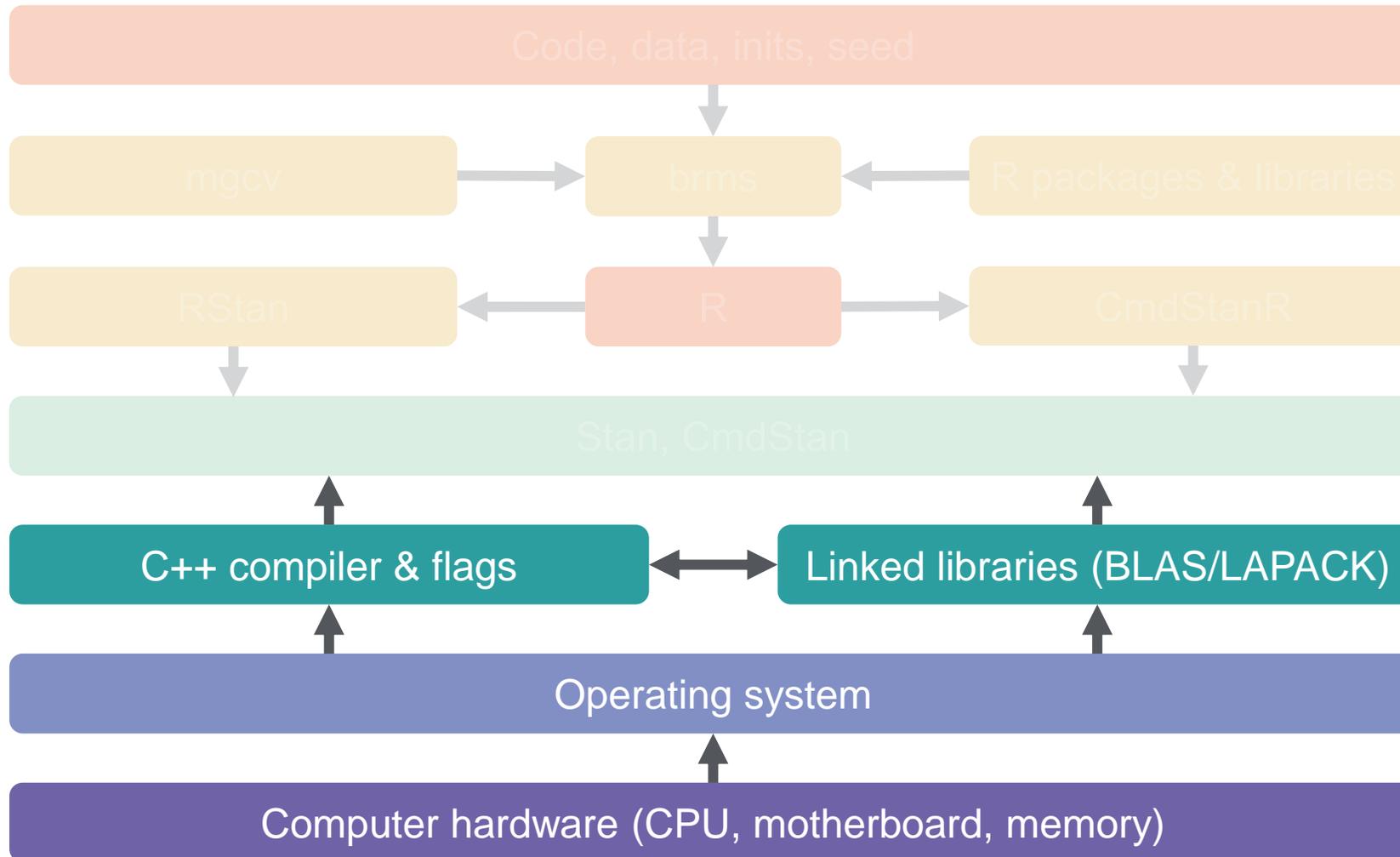
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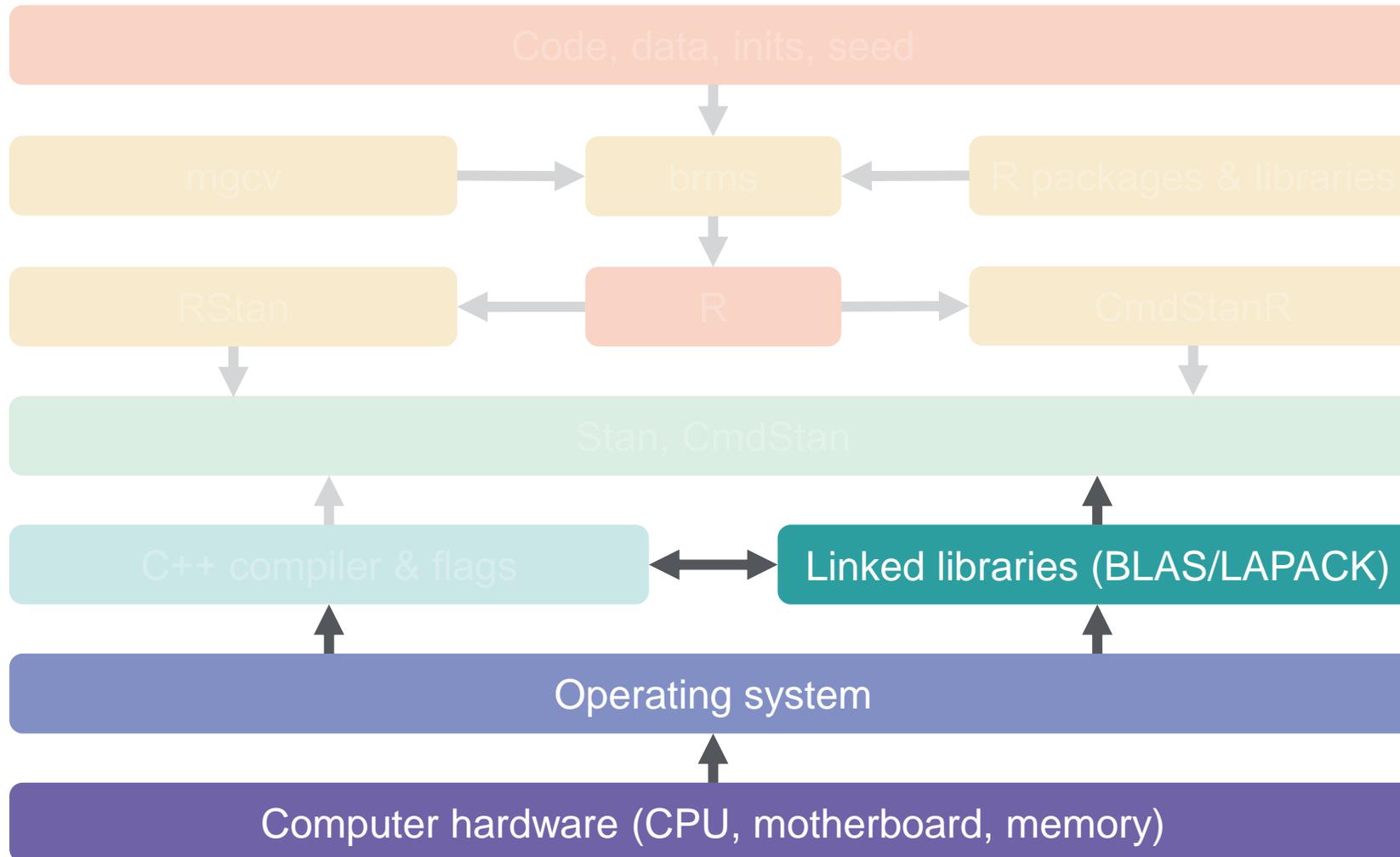
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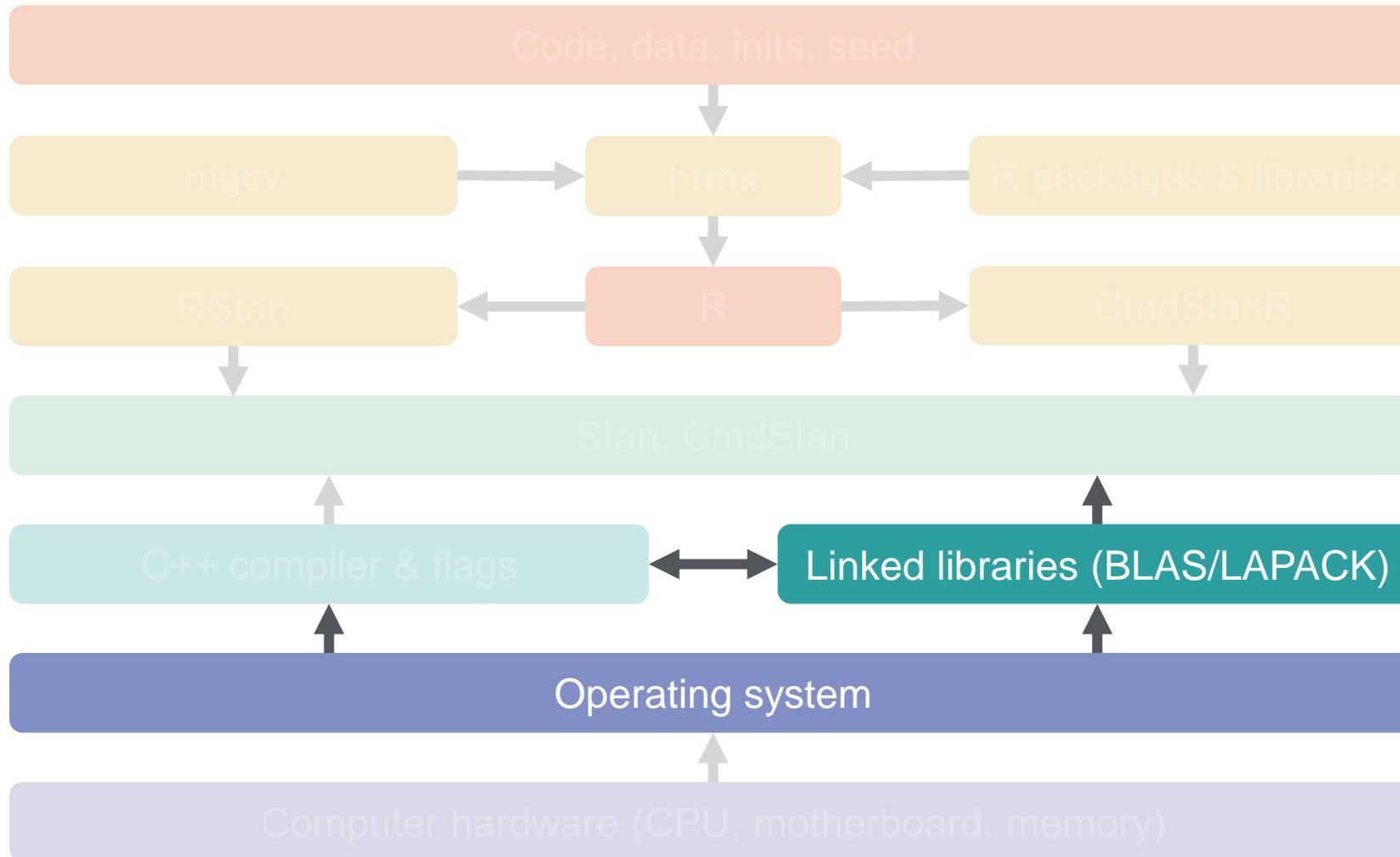
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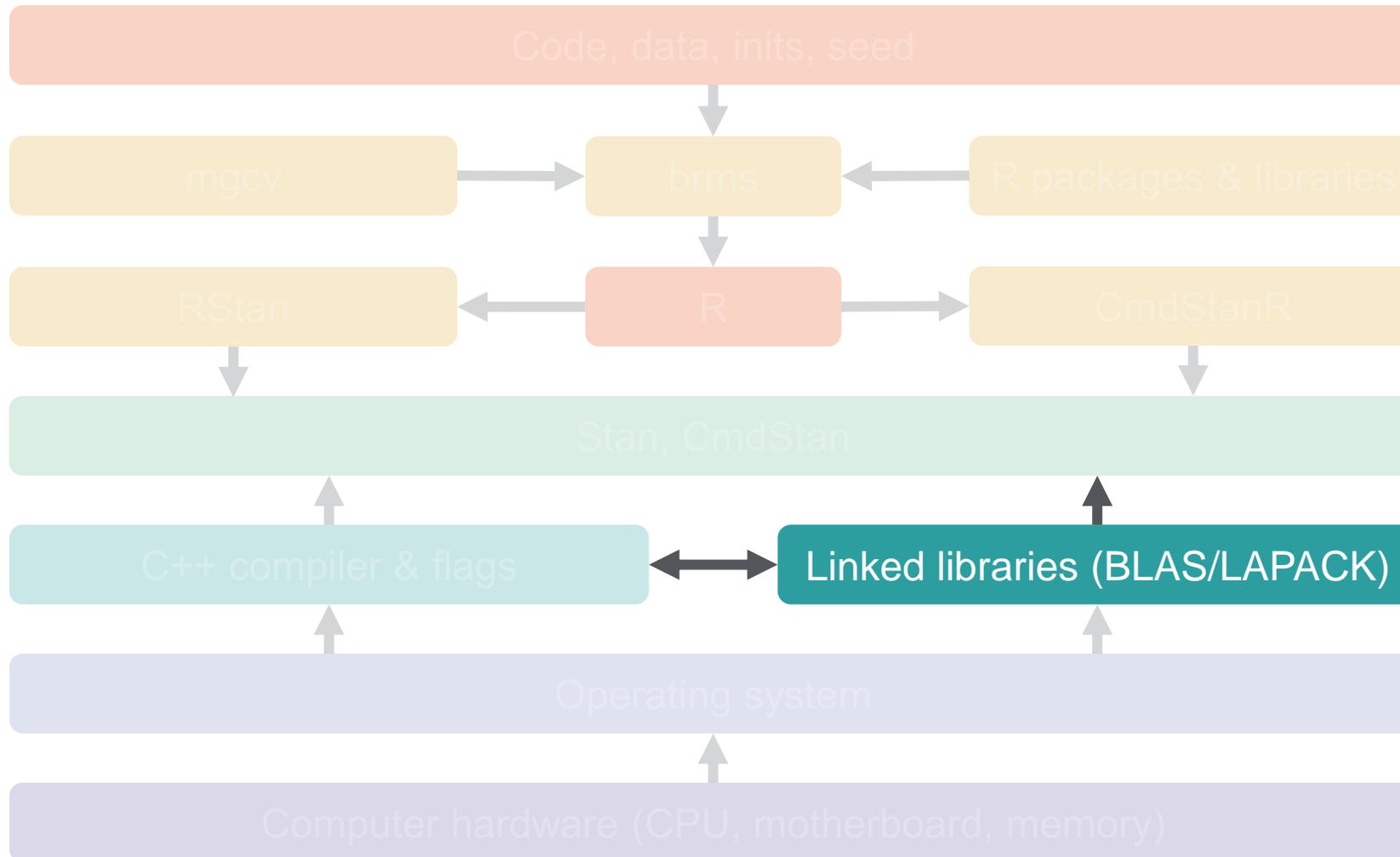
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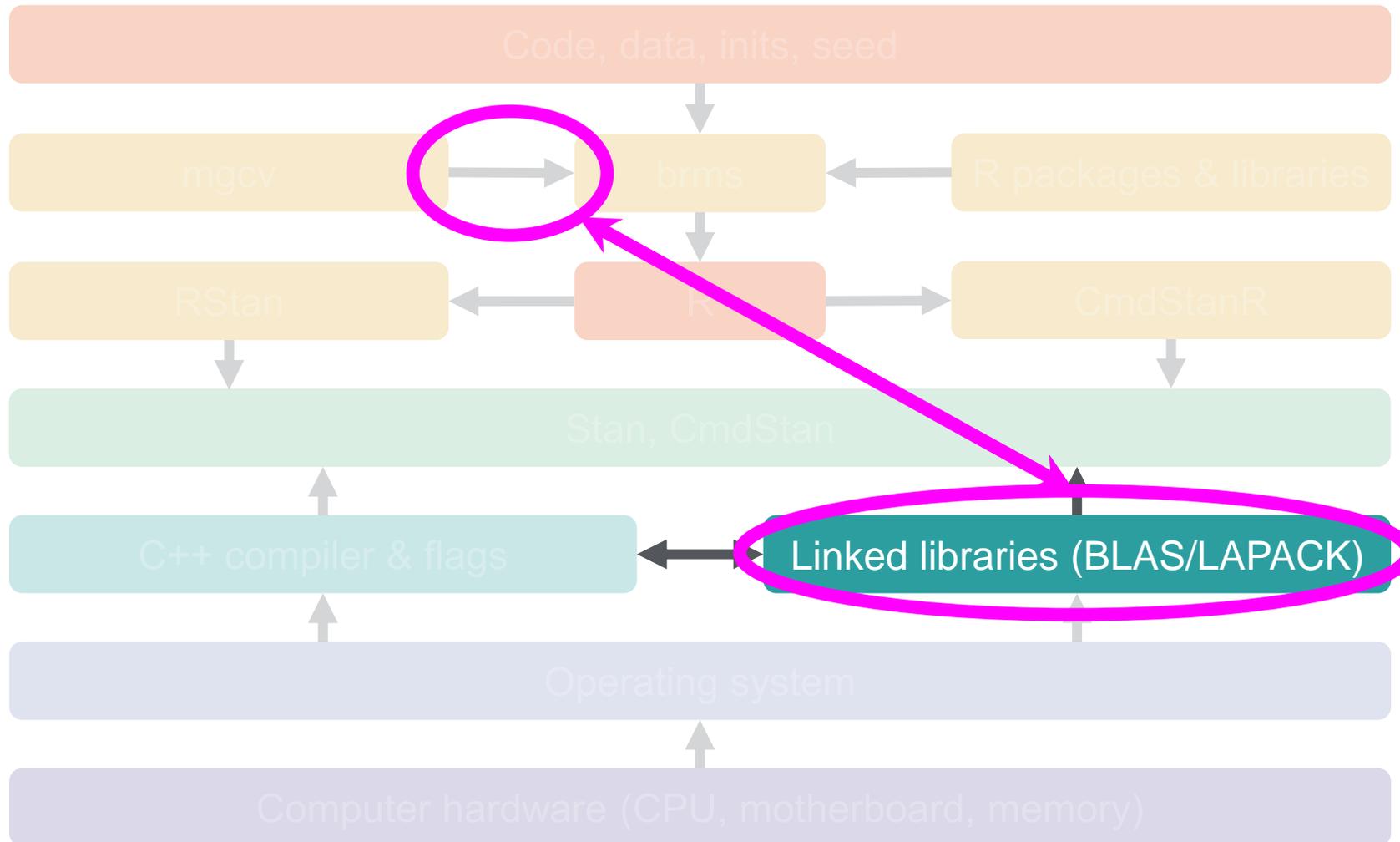
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Open-source modelling

A multitude of interacting elements



And they all modelled happily ever after...

Efficient problem solving and mutual learning



Rigorous model validation

Systematic debugging

System admin support

Open-source community collaboration

And they all modelled happily ever after...

Efficient problem solving and mutual learning

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Rigorous model validation

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- Fixed pernicious, long-standing bug 🐛
- Models now guaranteed portable 🙌
- Runtime reduced x165 to ~2:35 hrs 🚀 😄



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