WE ARE GETTING FASTER – SO WHAT?
DATA-DRIVEN, SUSTAINABLE SOFTWARE PRODUCT DEVELOPMENT

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THE TEAM

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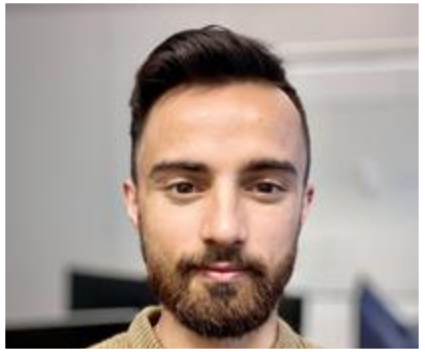


Bhuwan Paudel
Ph.D. Candidate

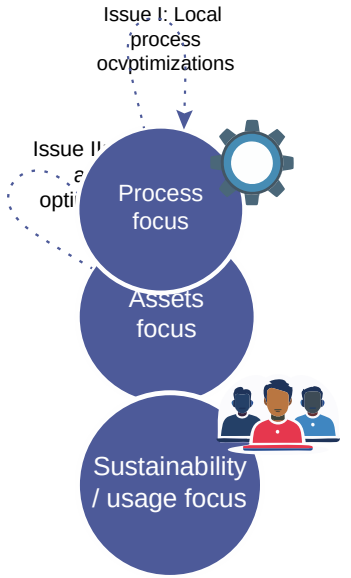
WITH A LITTLE HELP FROM OUR FRIENDS...


DATA DRIVEN ORGANIZATIONS
IN THE JOURNEY TO BE FASTER
Dec

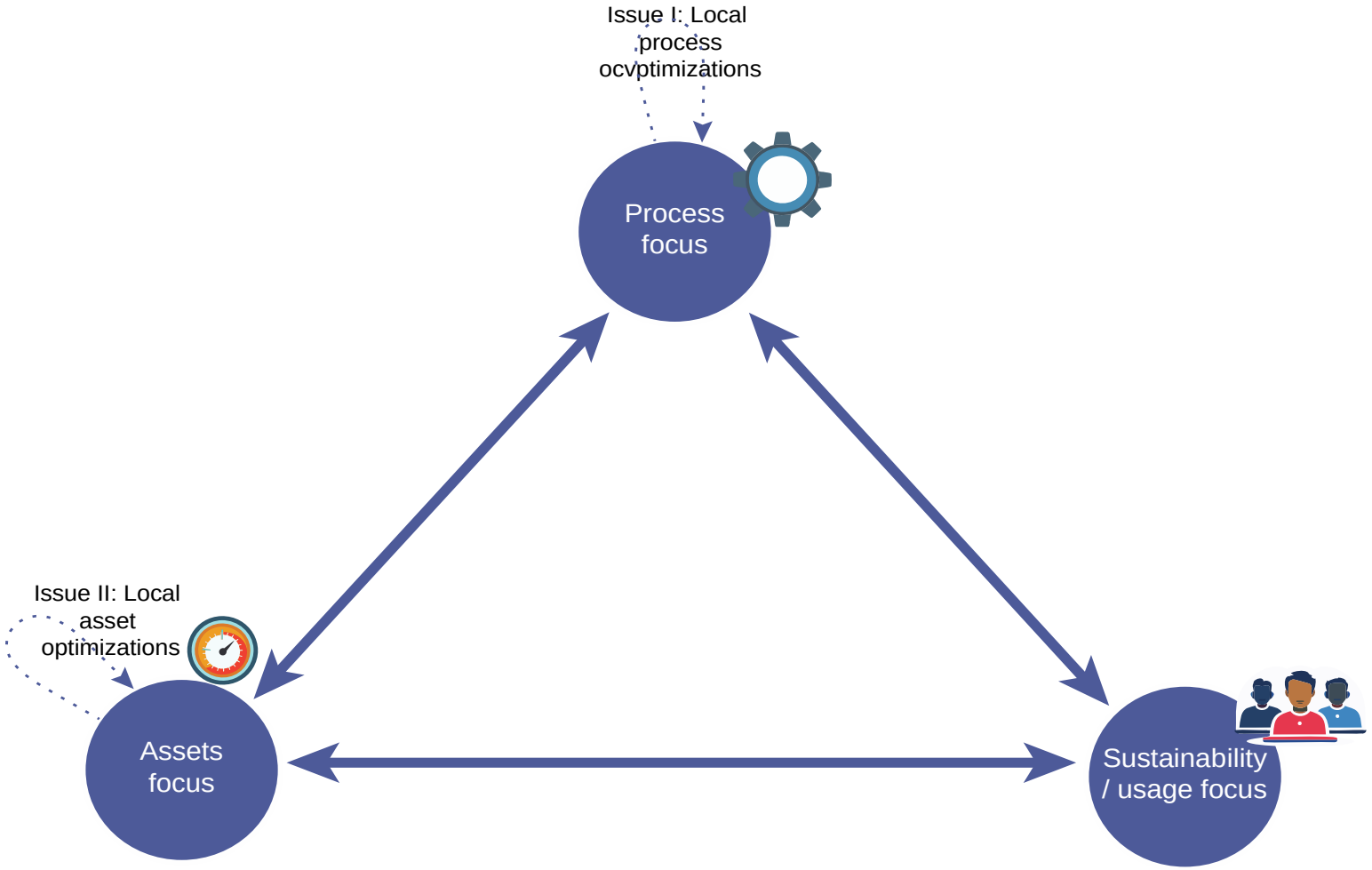
IN A DATA-DRIVEN SOFTWARE DEVELOPMENT ORGANIZATION IN A GALAXY FAR, FAR AWAY

WHAT HAPPENS WHEN YOU LOOK AT INTERNAL METRICS

- In the majority of the cases we tend to collect metrics from the process like DORA (change lead time, deployment frequency, mean time to recovery, change failure rate)
- In other cases organizations might be looking at their code quality from their CI/CD pipelines
- Does this mean that we are faster (delivering what we want to deliver)?
- Do we know if our products are used as we expect to?
- Do we know if we are building what our customers want to use?

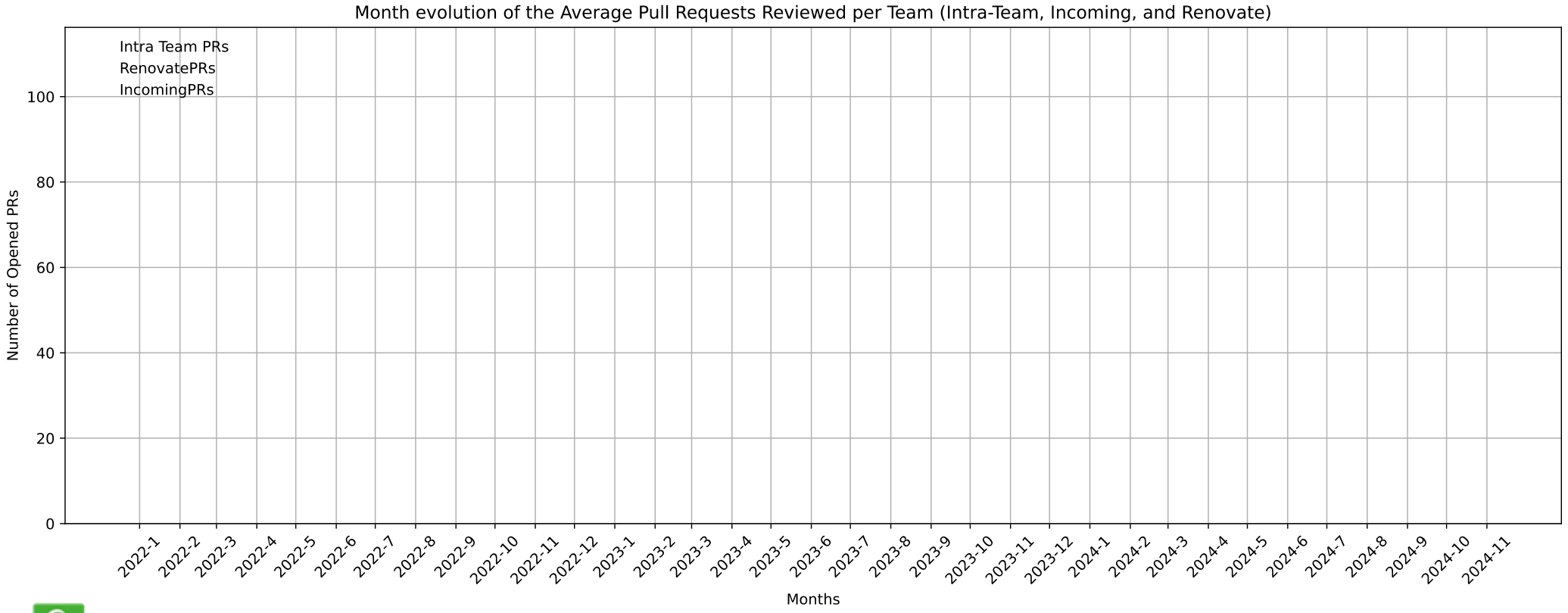


BUILDING SUSTAINABLE SOFTWARE PRODUCTS



THE WAY TO GETTING FASTER…

FIRST: ARE WE GETTING FASTER?

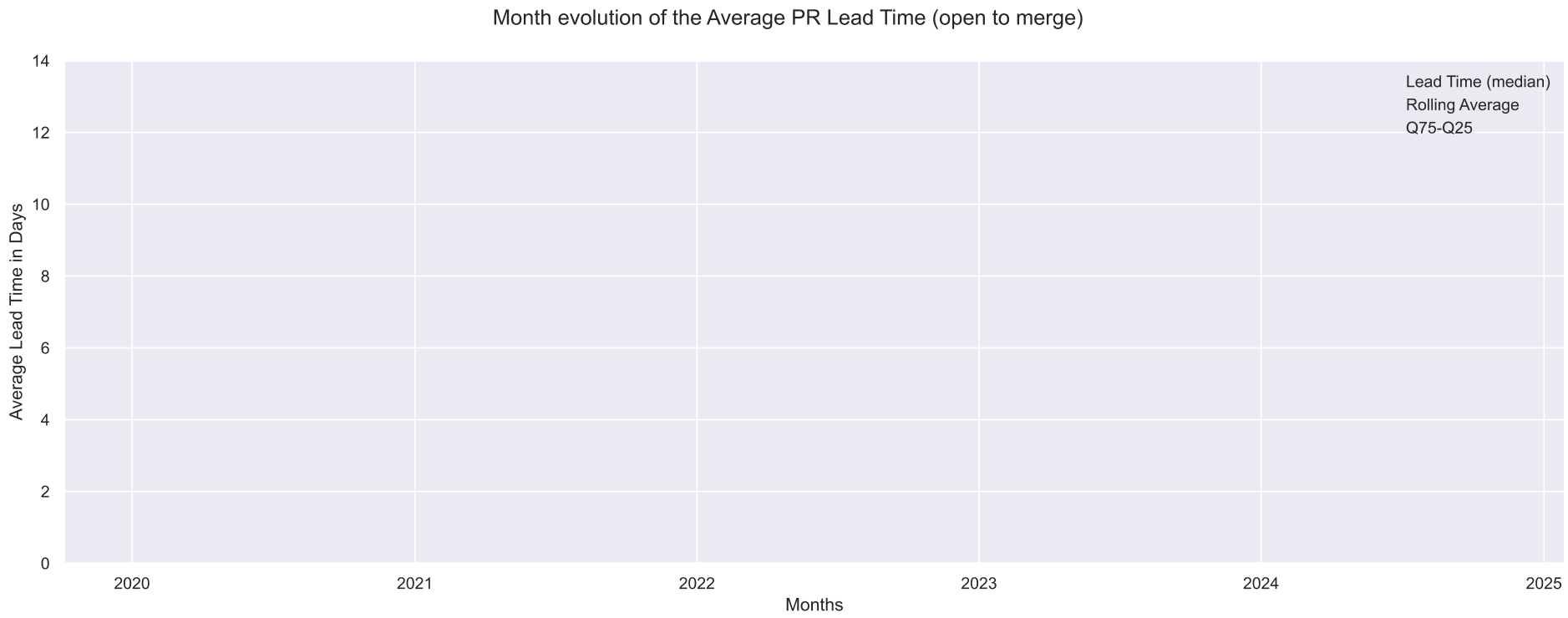


FIRST: ARE WE GETTING FASTER?

Note, on Avg it continues taking 11 days to merge a PR, but:

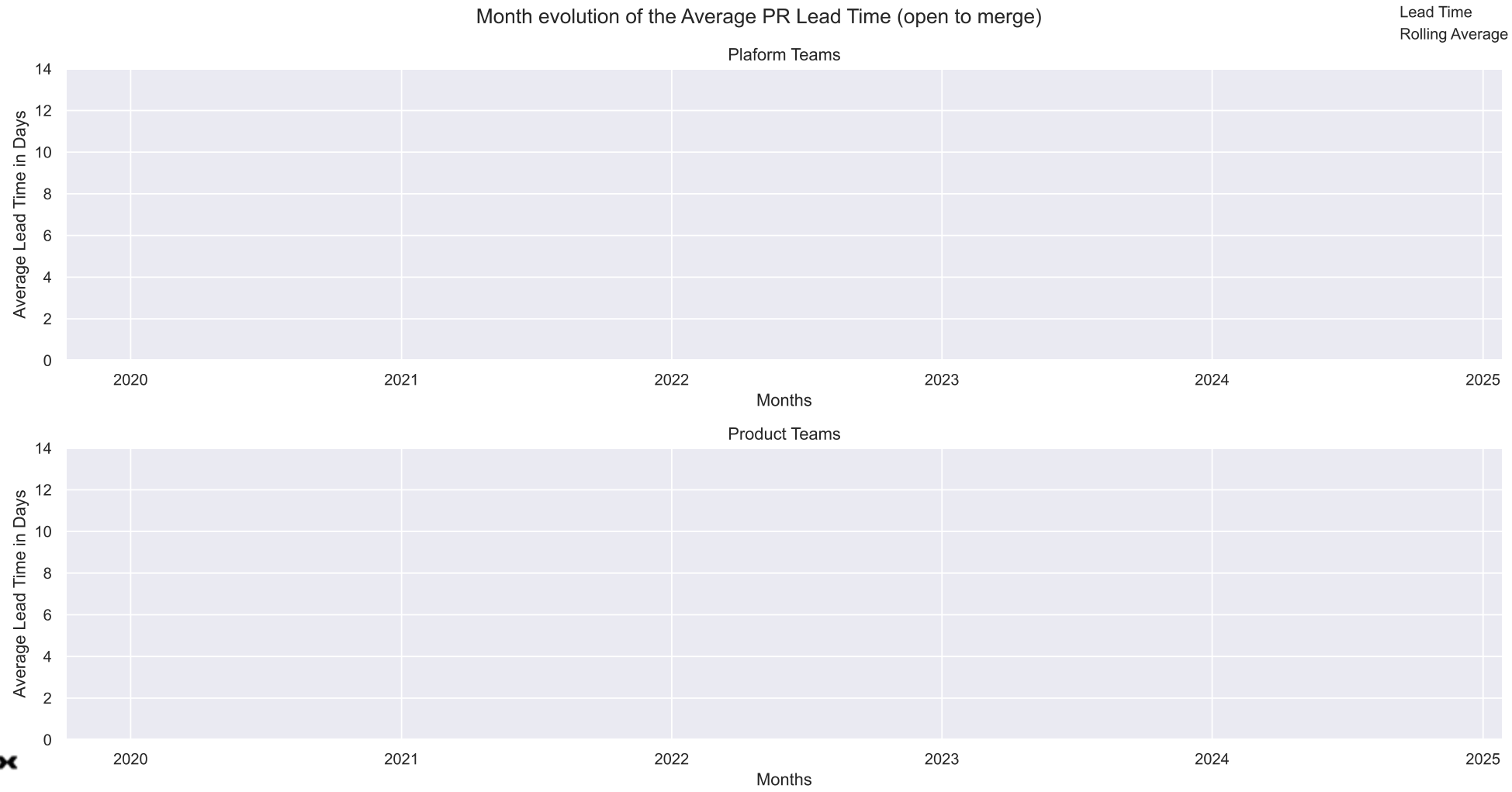
50% (median) are merged in ~1-2 days

75% of them are merged in around 3-4 days



FORTNOX
Småföretagens bästa vän

FIRST: ARE WE GETTING FASTER?



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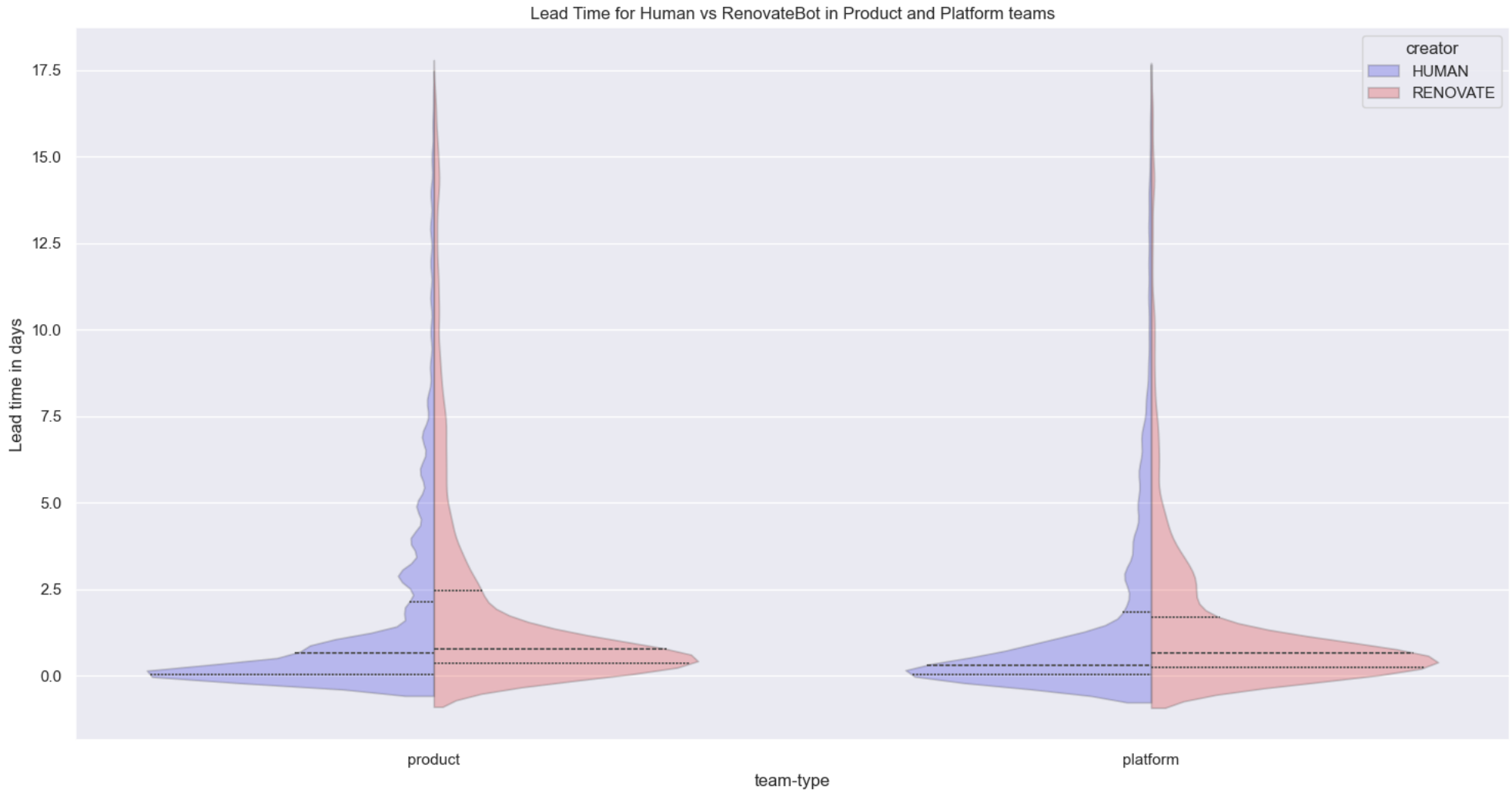


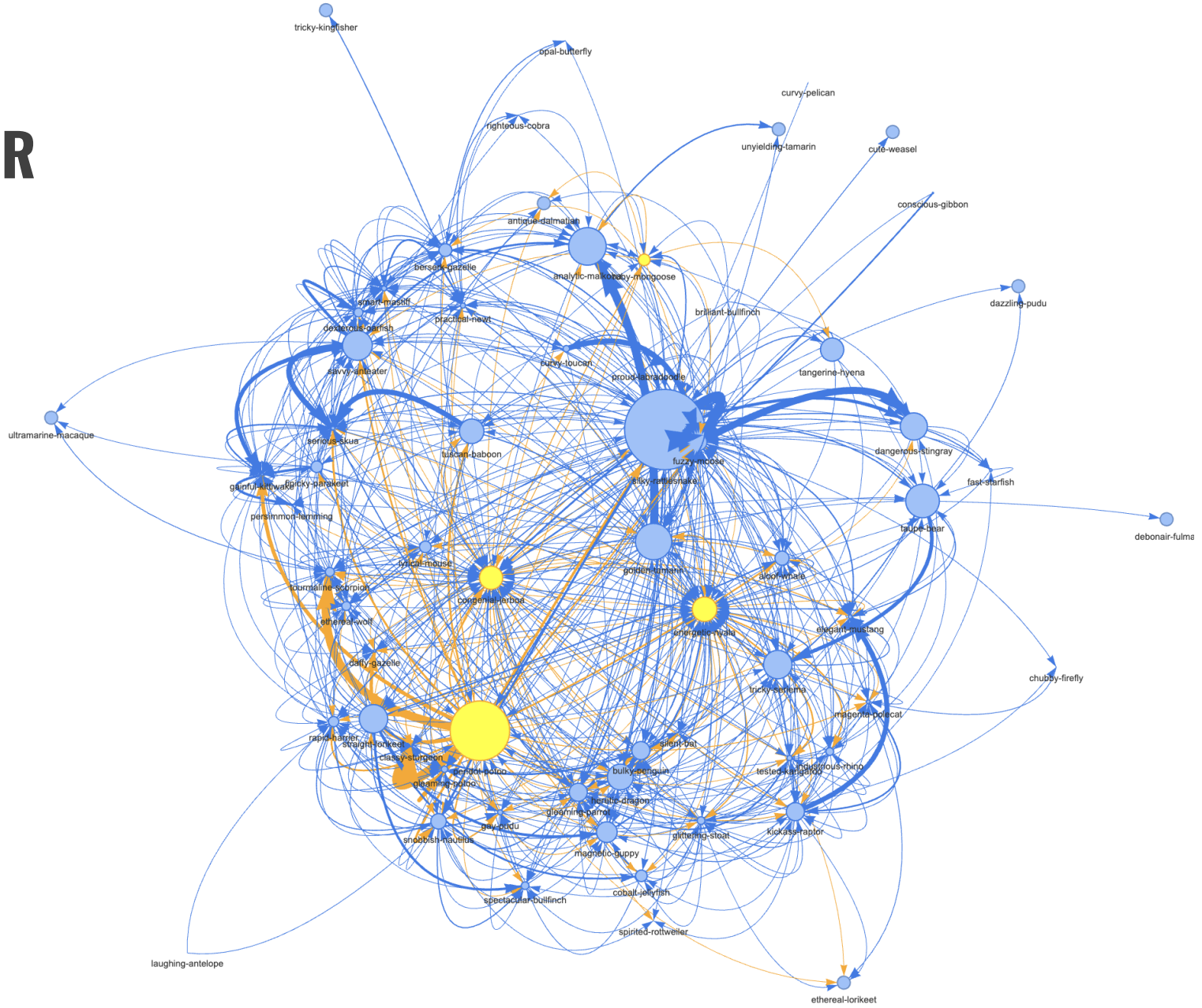
HOWEVER... IF WE DIG DEEPER

This is the social network of Pull Requests

Dots are teams (yellow platform, blue product)

Lines are shared pluu requests between teams

If we dig into it, we can try to see what happens with individual teams



CONGESTION

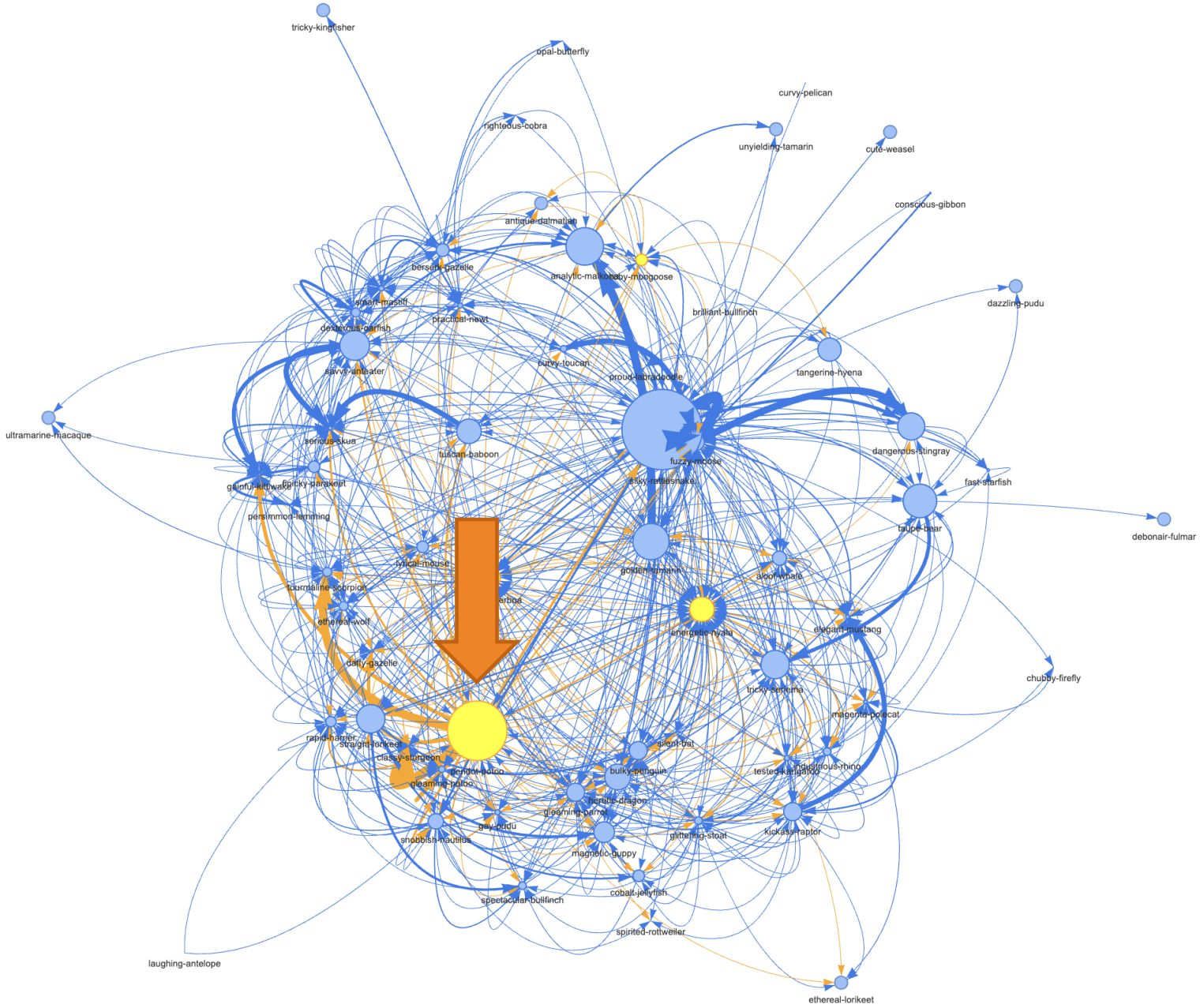
Here we use the “team congestion” concept borrowed from networking

Congestion occurs when resource demands exceed its capacity

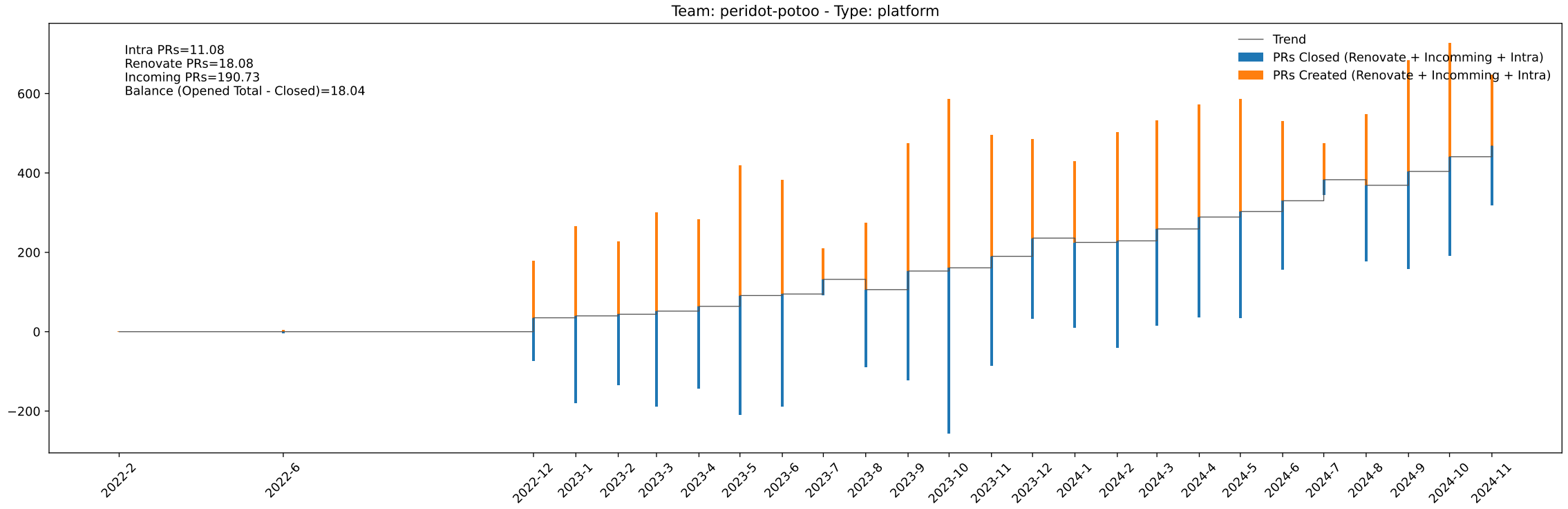
For teams, congestion occurs when stakeholders demand more from the team than what the team can deliver

CONGESTION

Let’s dig deeper…



WHAT HAPPENS WITH INDIVIDUAL TEAMS? CONGESTION?



TEAM'S PULL REQUEST NETWORK

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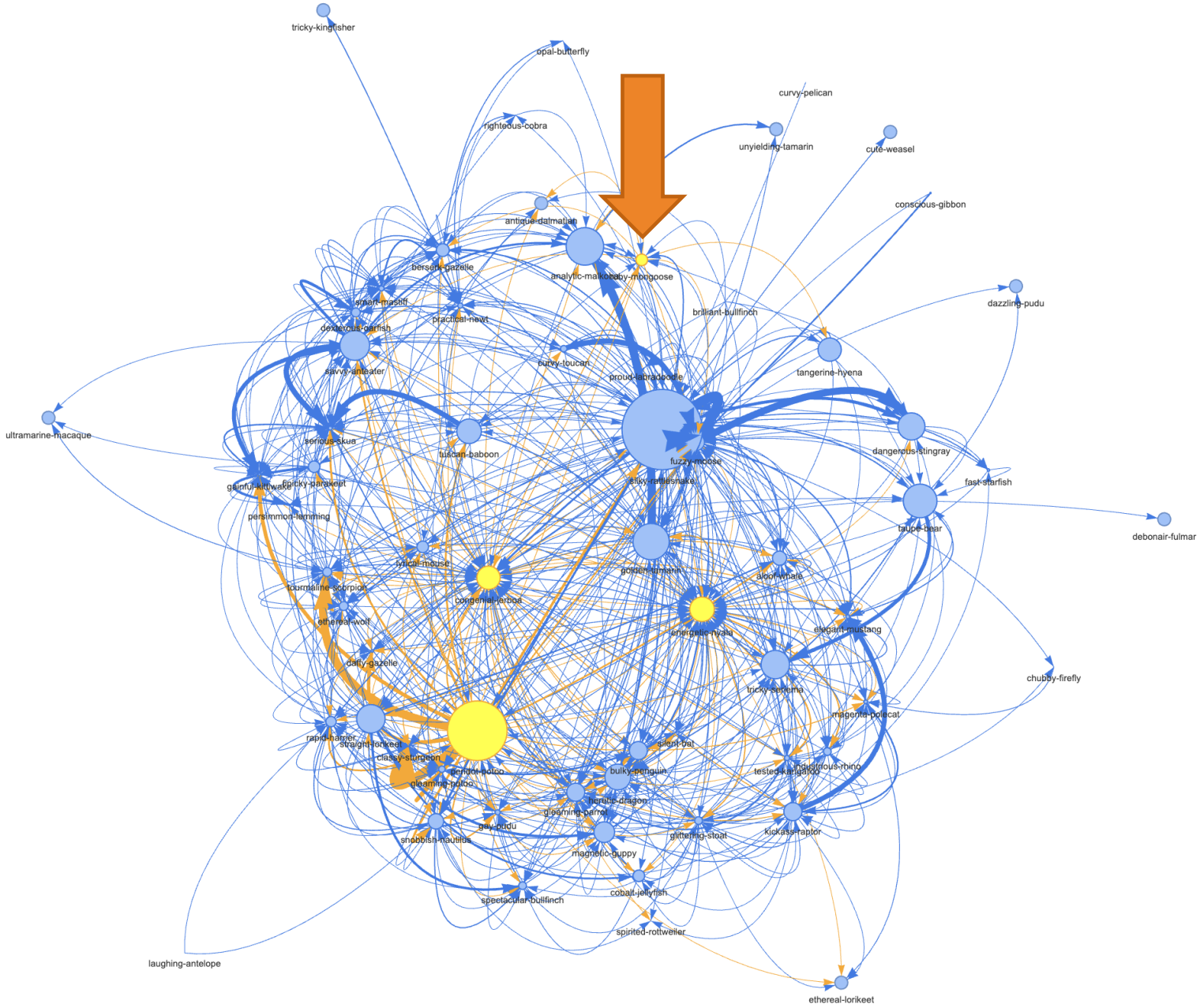
CONGESTION

Another platform team



CONGESTION

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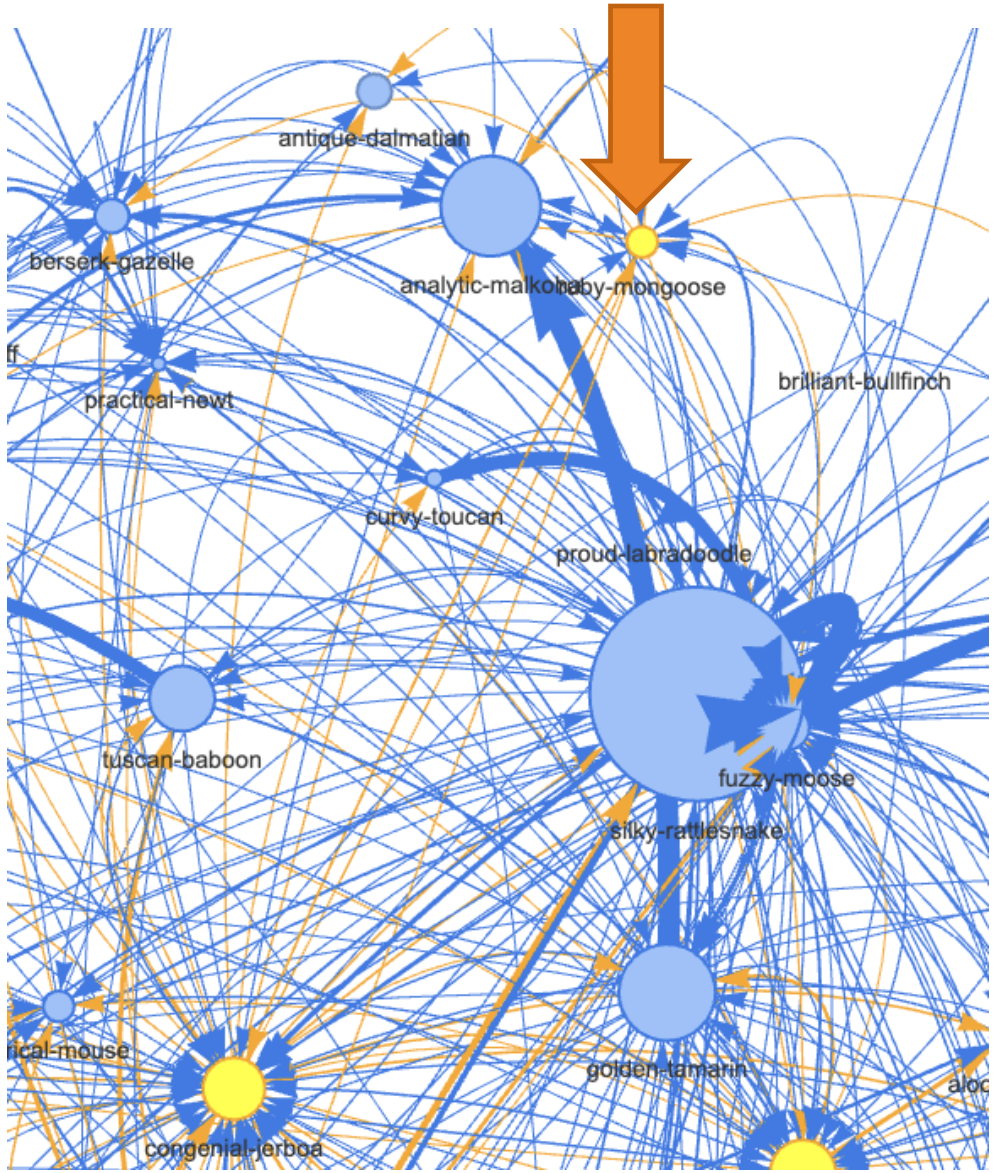

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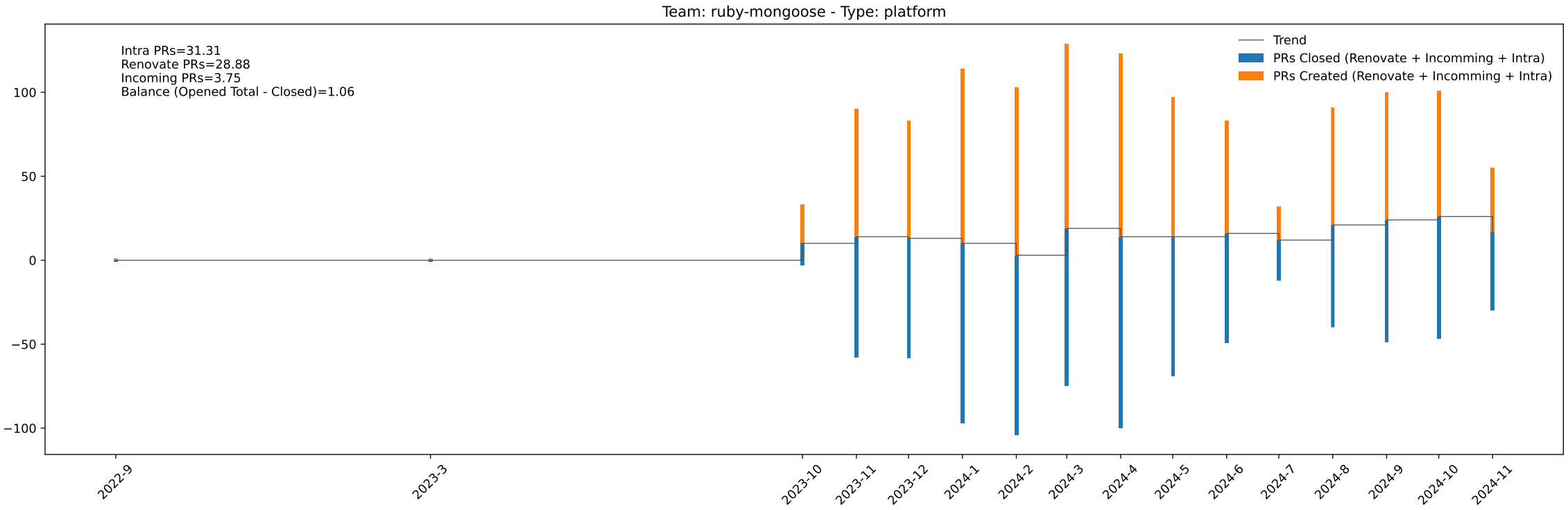

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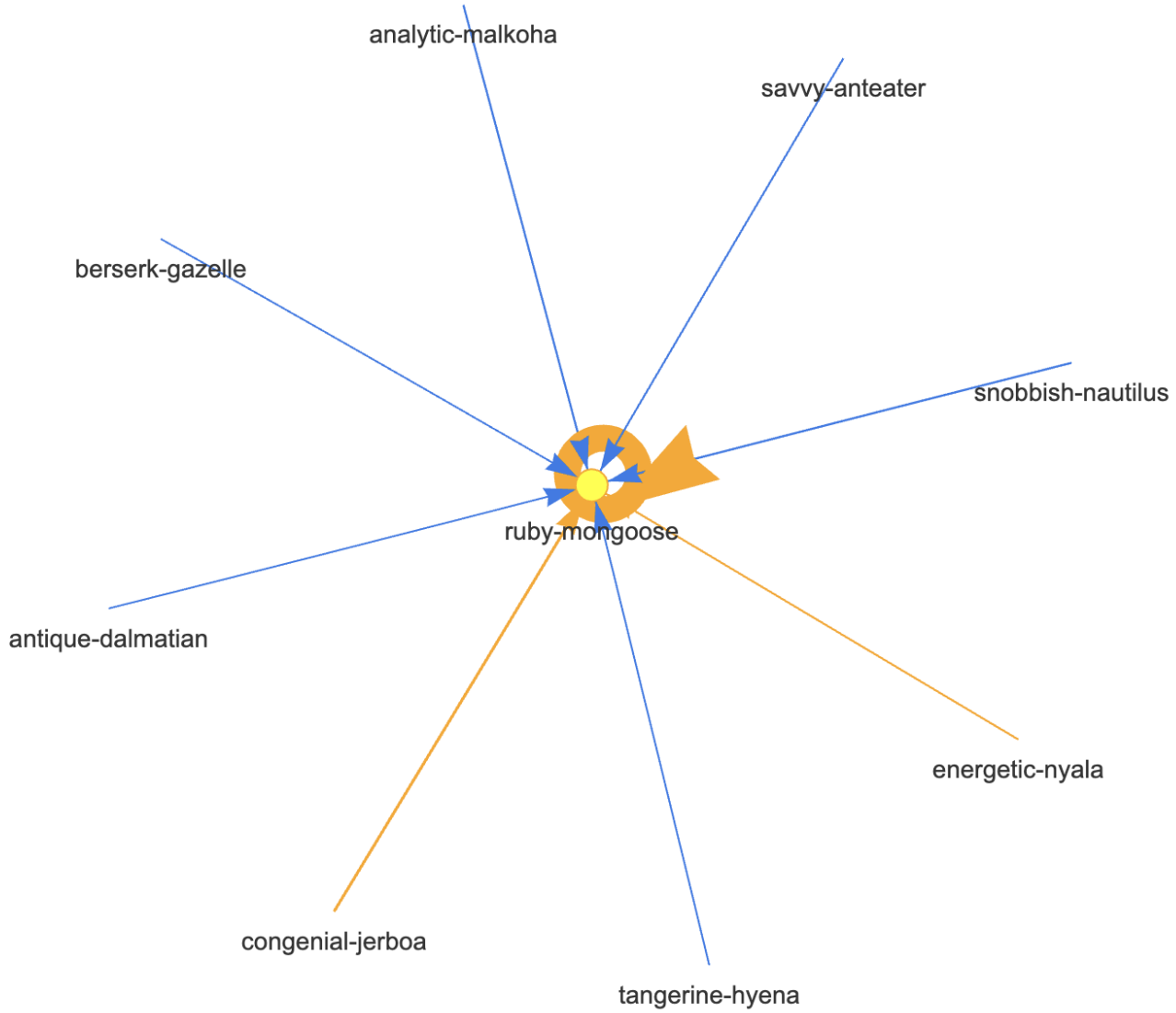

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TAKE AWAYS

- Using process data can help us monitor wether we continue being as fast
- But also can help us identify potential bottleneks or also predict teams that can become bottleneks

DATA DRIVEN ORGANIZATIONS FASTER, BETTER?, WHY NOT BOTH?

THE WAY TO GETTING BETTER…

Sustainability / usage focus

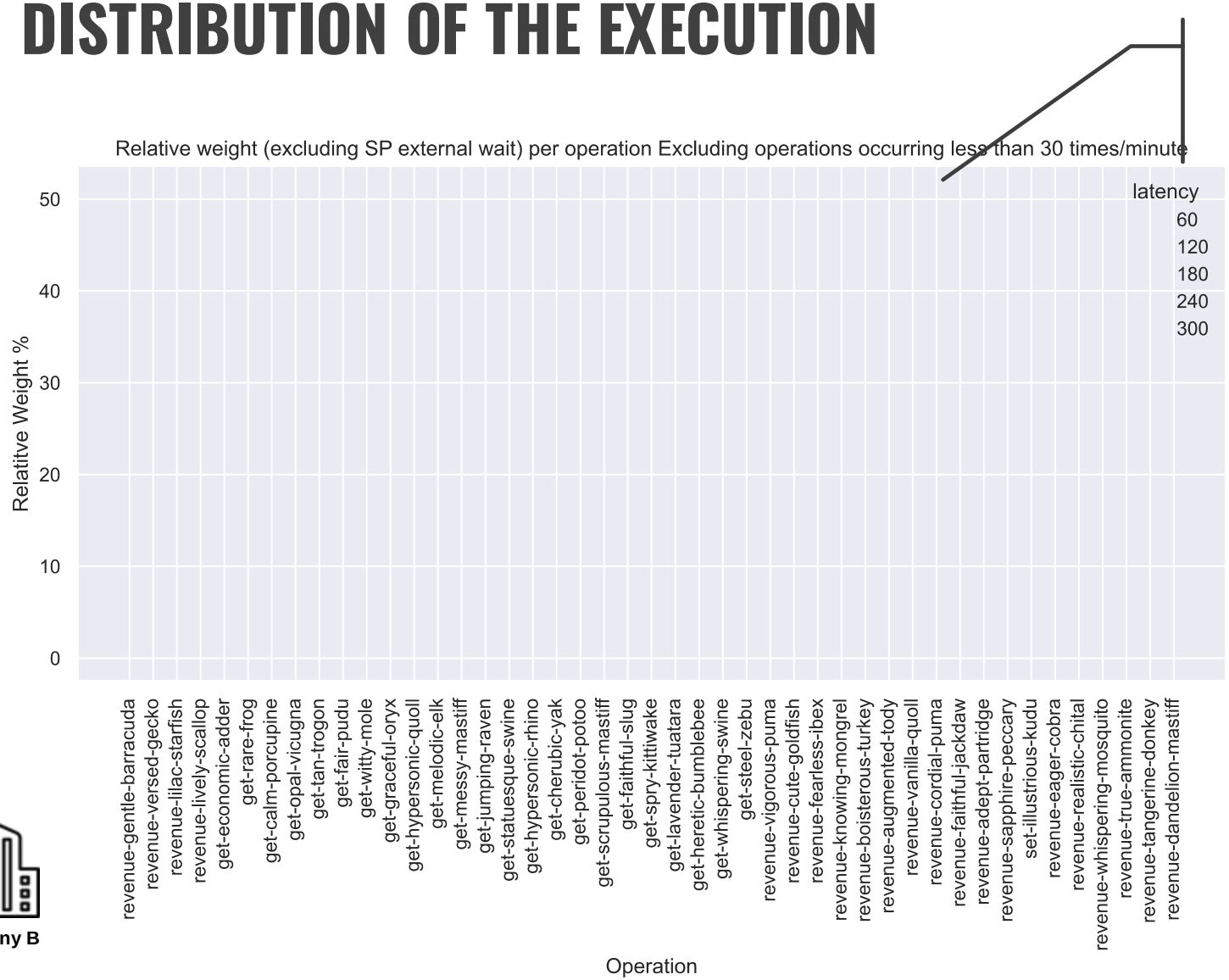

THE TIP OF THE ICEBERG

BUILDING SUSTAINABLE SOFTWARE PRODUCTS

- In this presentation we are just scratching the surface
- We have analyzed ~80 days of usage data on one deployment of a large-scale system
- The system is deployed in >25 countries, by service providers, but we are just analyzing one instance
- Everything is confidential so I will not disclose the domain
  - I will talk about revenue-generating operations vs non-revenue-generating operations (*get* info or *set* info)

Company B

DISTRIBUTION OF THE EXECUTION



Heavy revenue-generating transacion: equivalent to 50% of the CPU

*RelativeWeight = #invocation * Latency*

Company B

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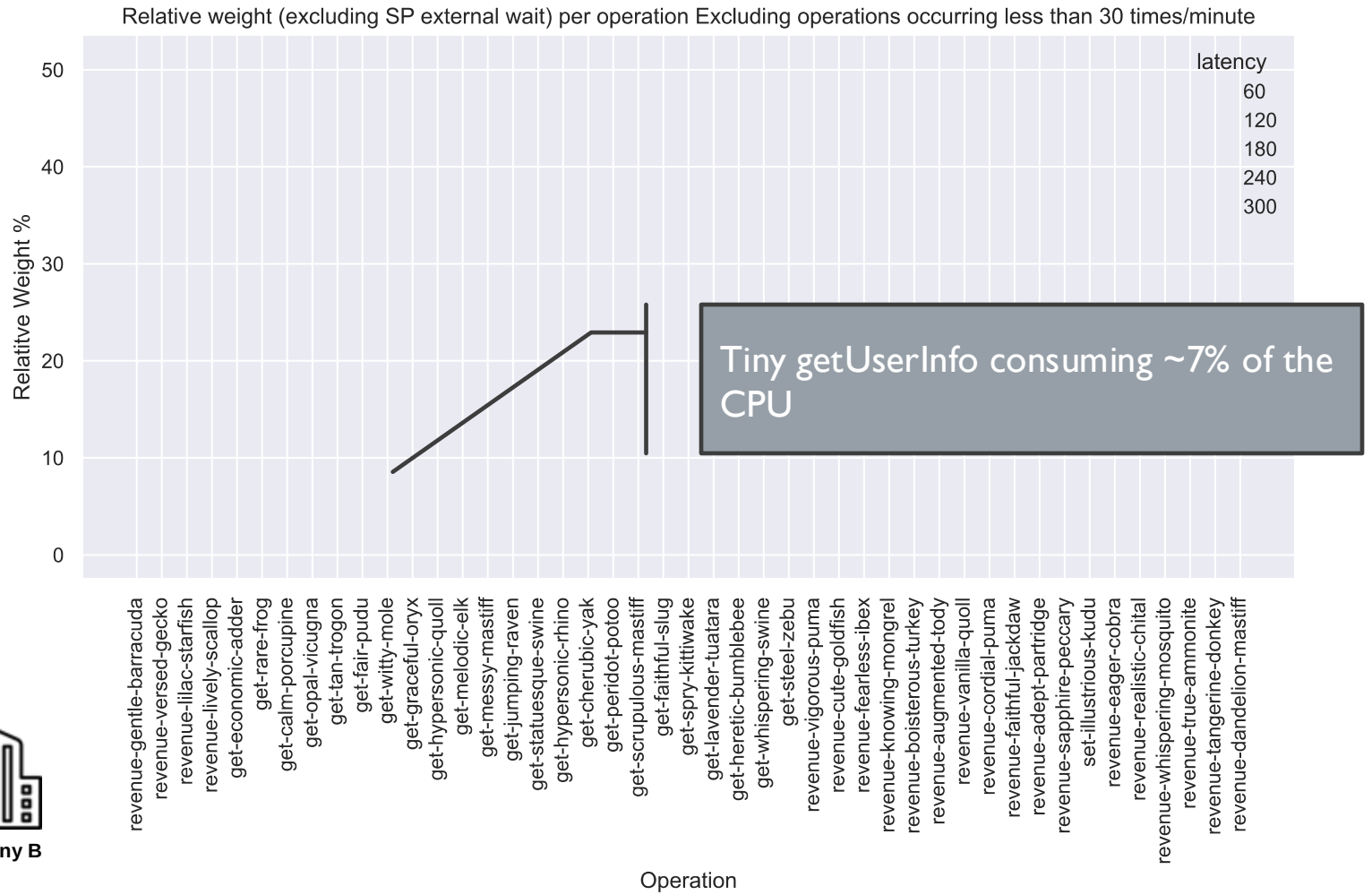
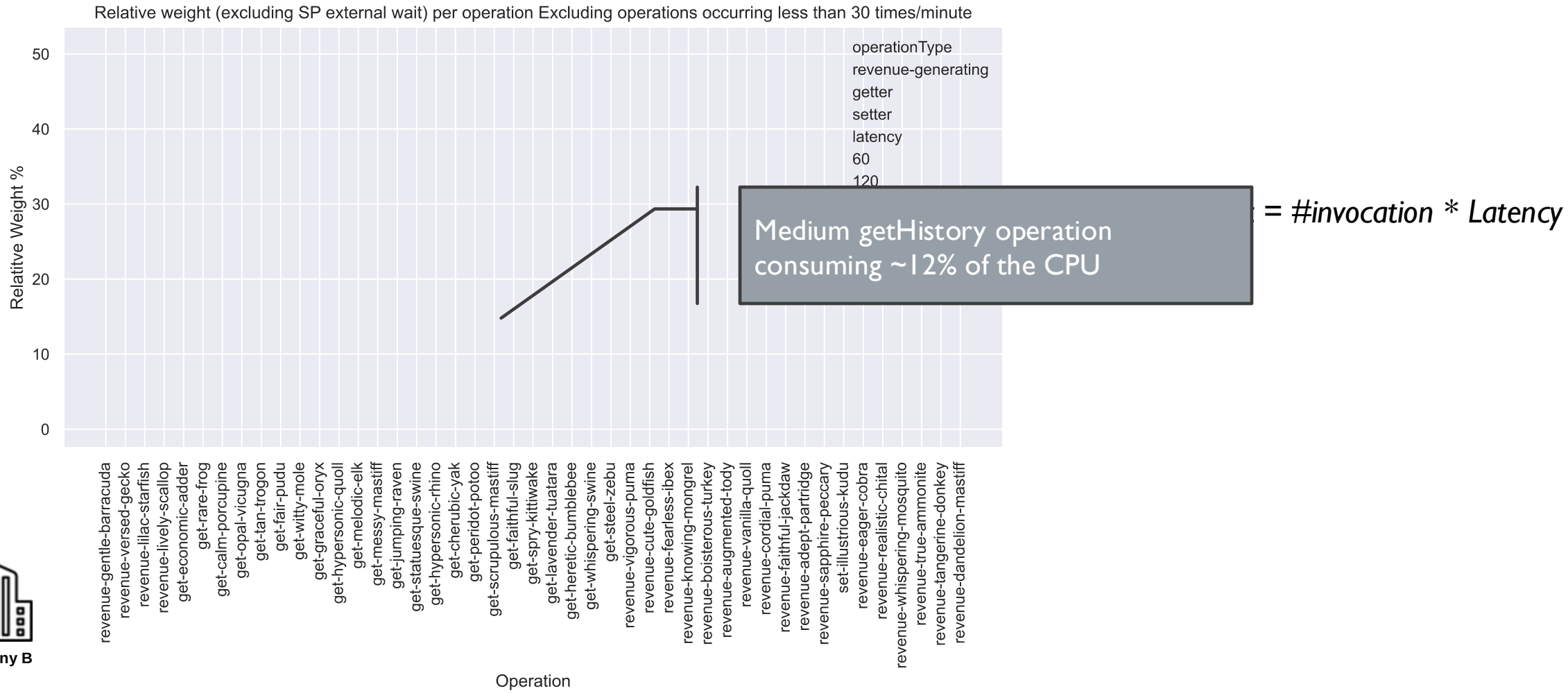


*RelativeWeight = #invocation * Latency*

Company B

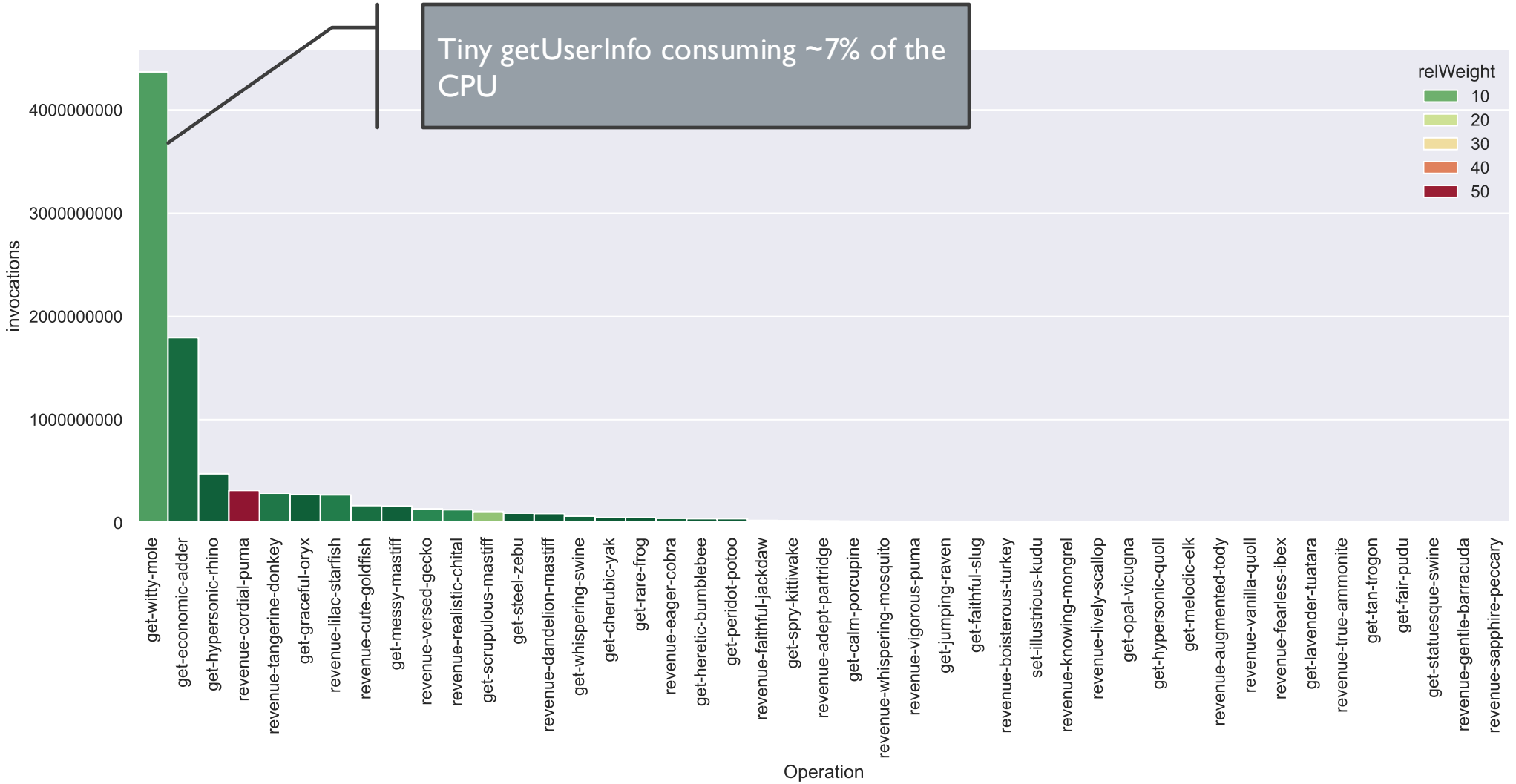
DISTRIBUTION OF THE EXECUTION (SWITCHING TO TYPES OF OPERATION)



= #invocation * Latency

Company B

LETS COMPARE THE RAW NUMBER OF INVOCATIONS



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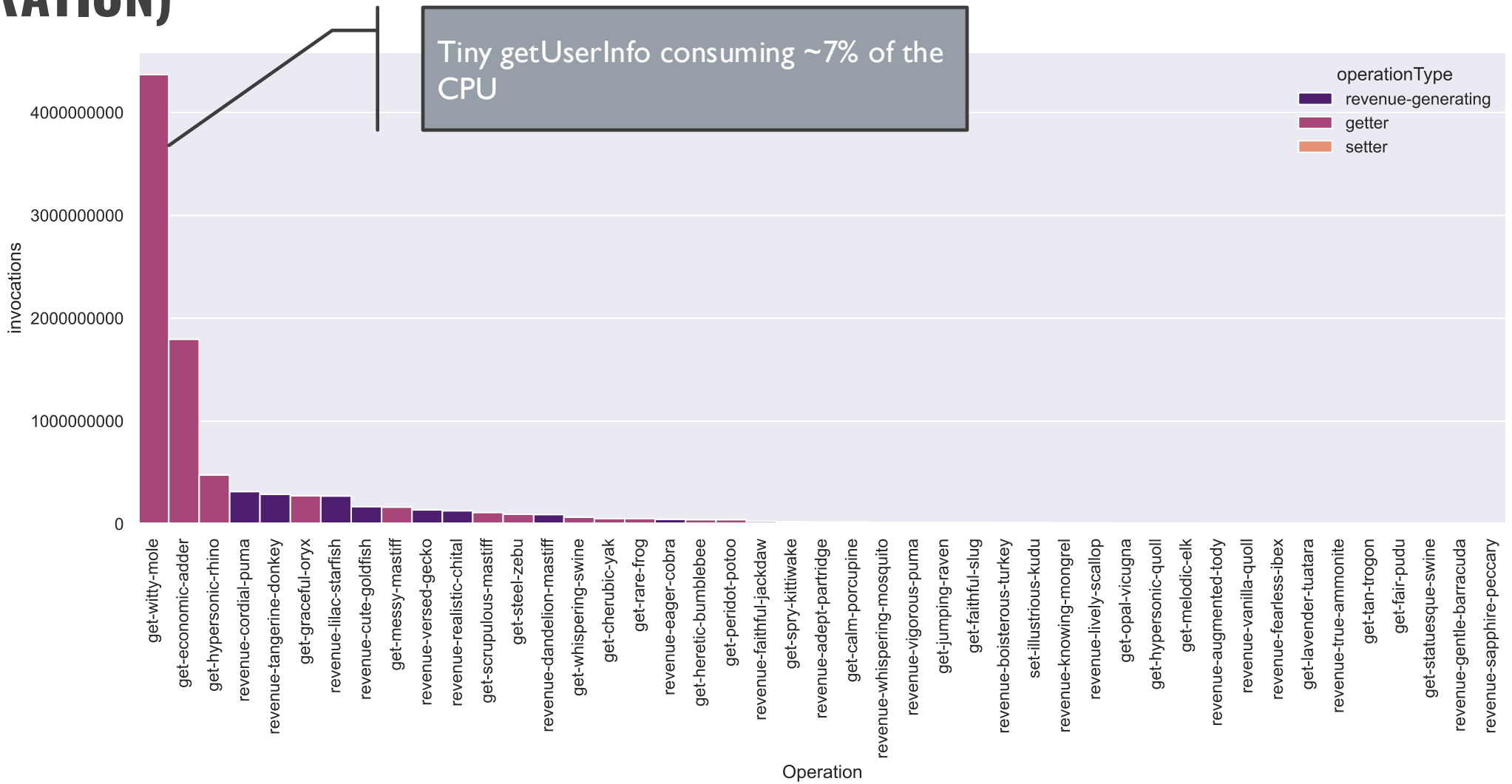

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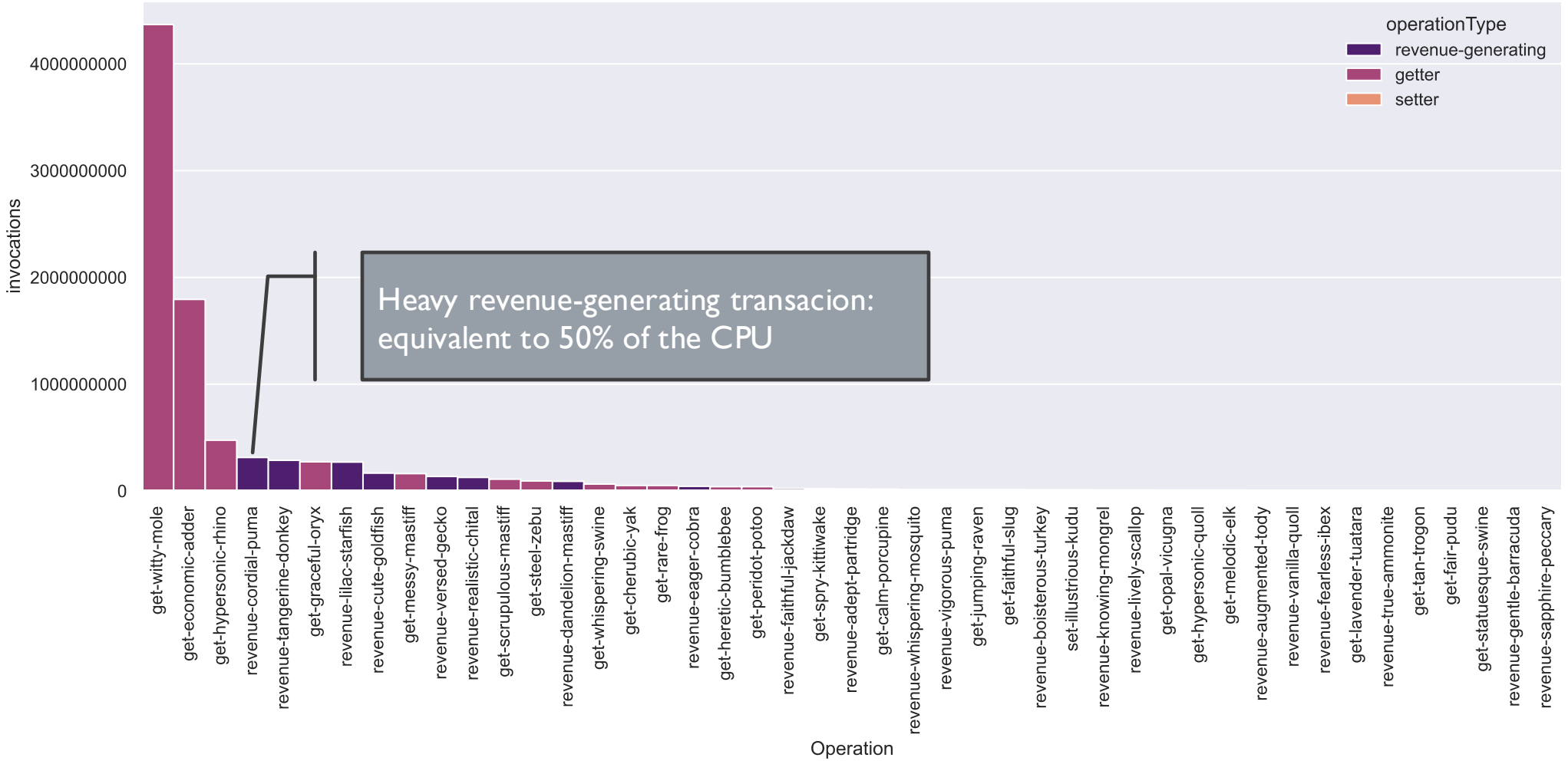

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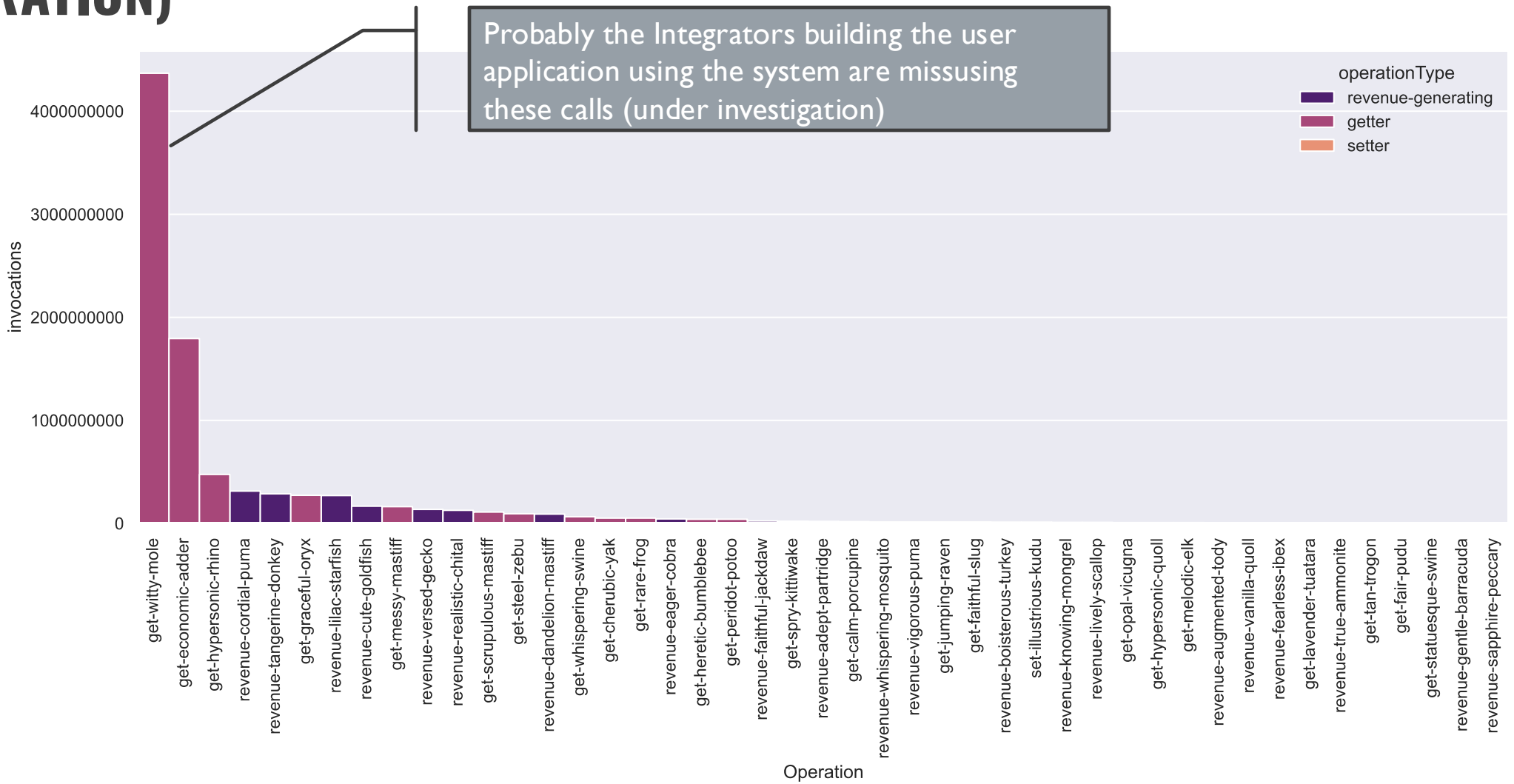
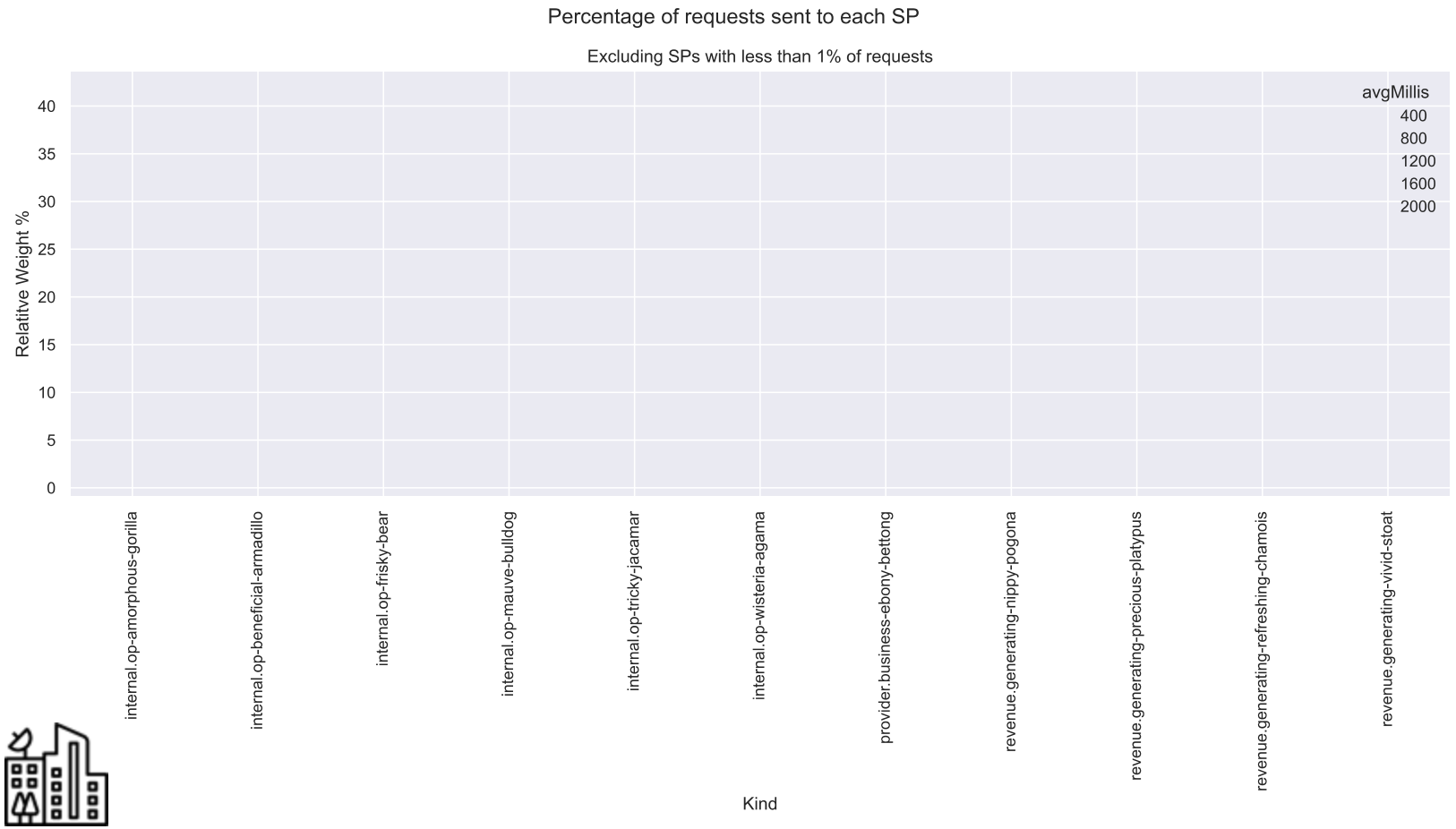


Company B

ANALYZING THE TARGET OF THE REVENUE-GENERATING OPERATIONS



Company B

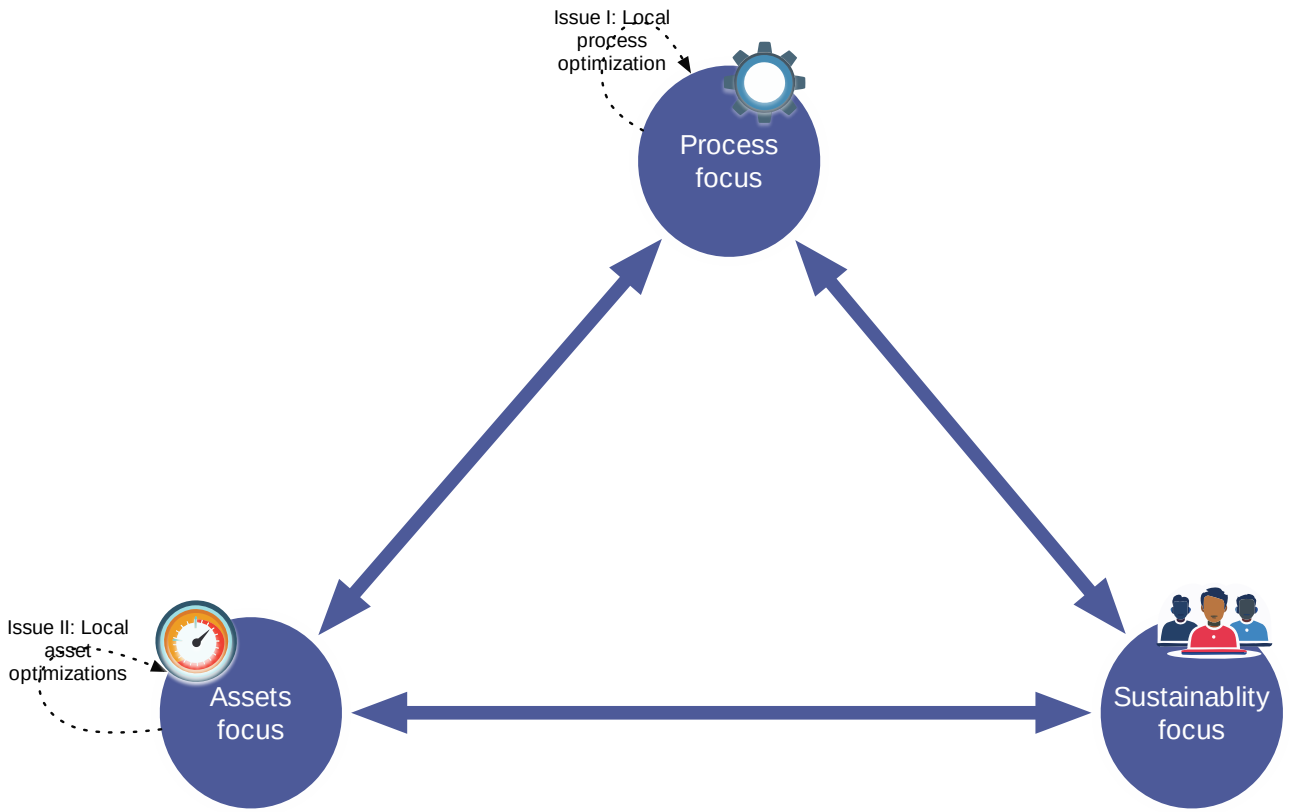
- The system is mainly devoted to operations confined to the context of the Service Provider
- That is not the main purpose of this system
- The majority of the green operations do not generate any revenue for the dev organization
- Only the red dot is transversing the boundaries of the Service Provider

Note: we are only showing the >1% invocation operations

WHAT IS NEXT?

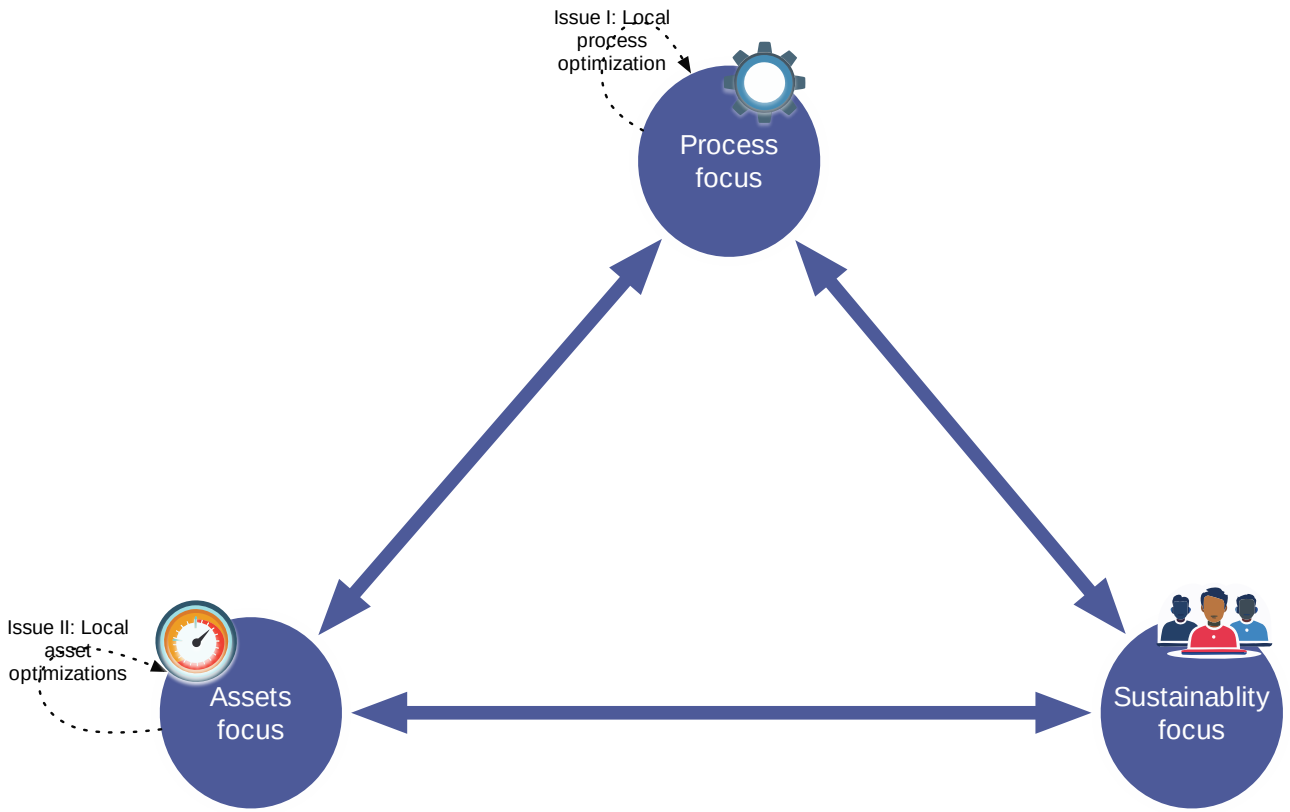
BUILDING SUSTAINABLE SOFTWARE PRODUCTS

- Using usage data like this does not help much either
- What is left is connecting it with process and assets



BUILDING SUSTAINABLE SOFTWARE PRODUCTS

- Are we building the operations that our users value and use?
- Are we maitaining and optimizing what is most used?
- Are we keeping in shape the parts of the products where we will innovate?



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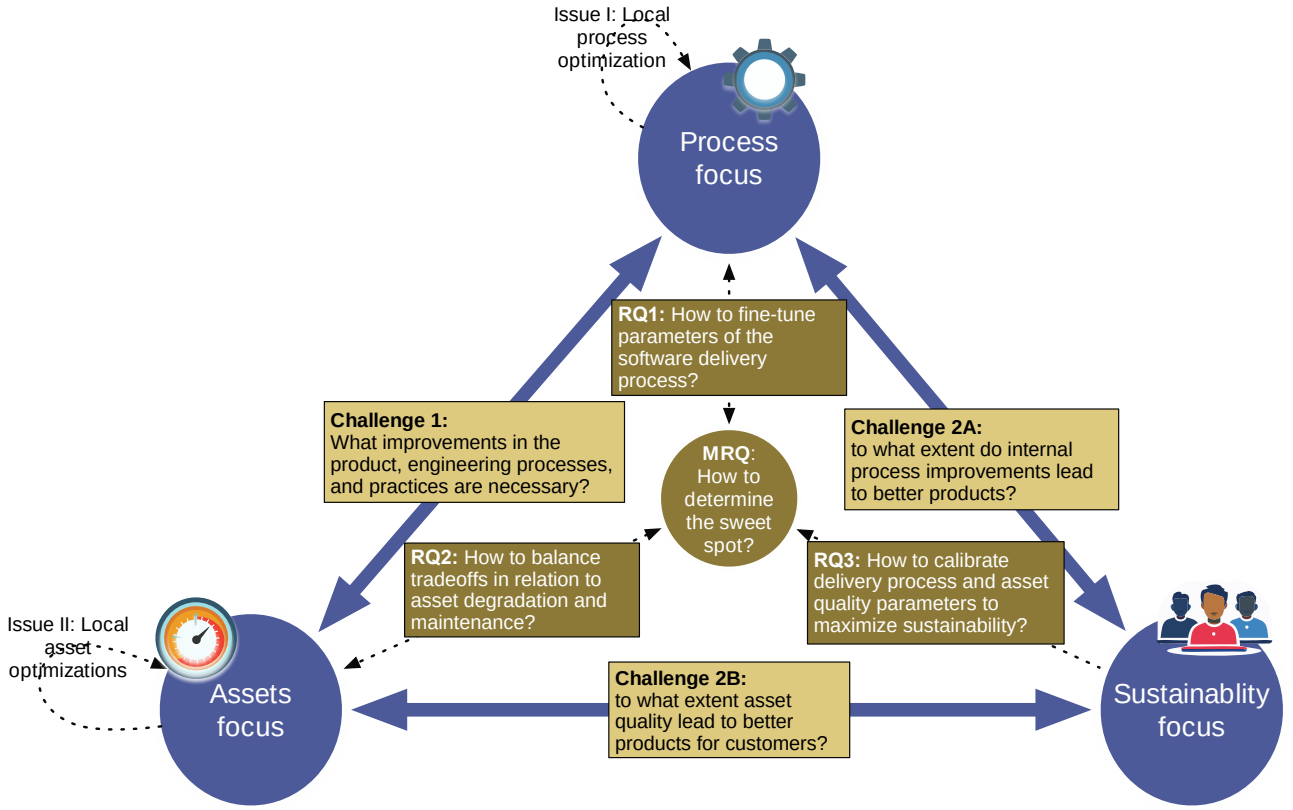


The End

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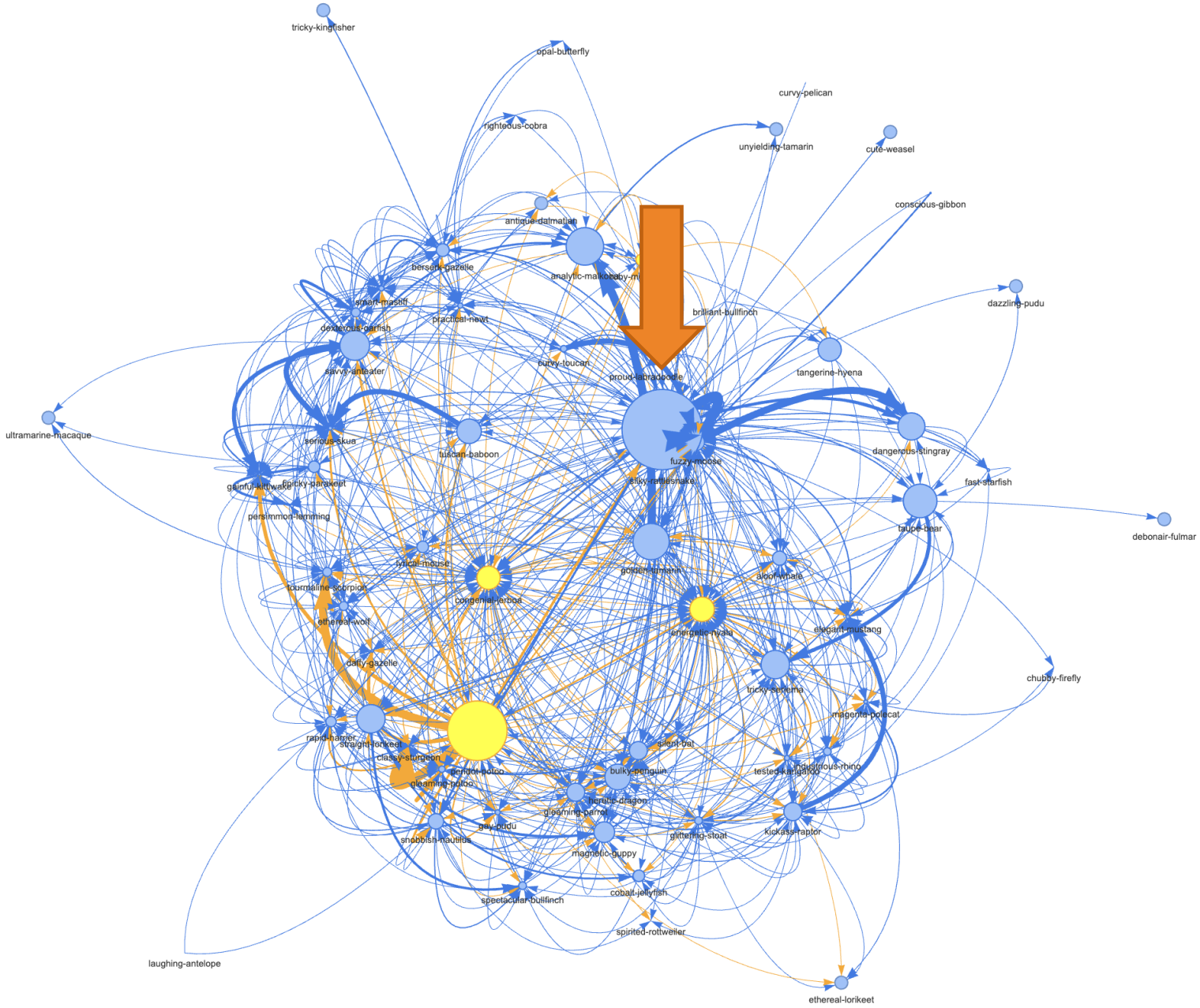
CONGESTION

Let's look to a product team…



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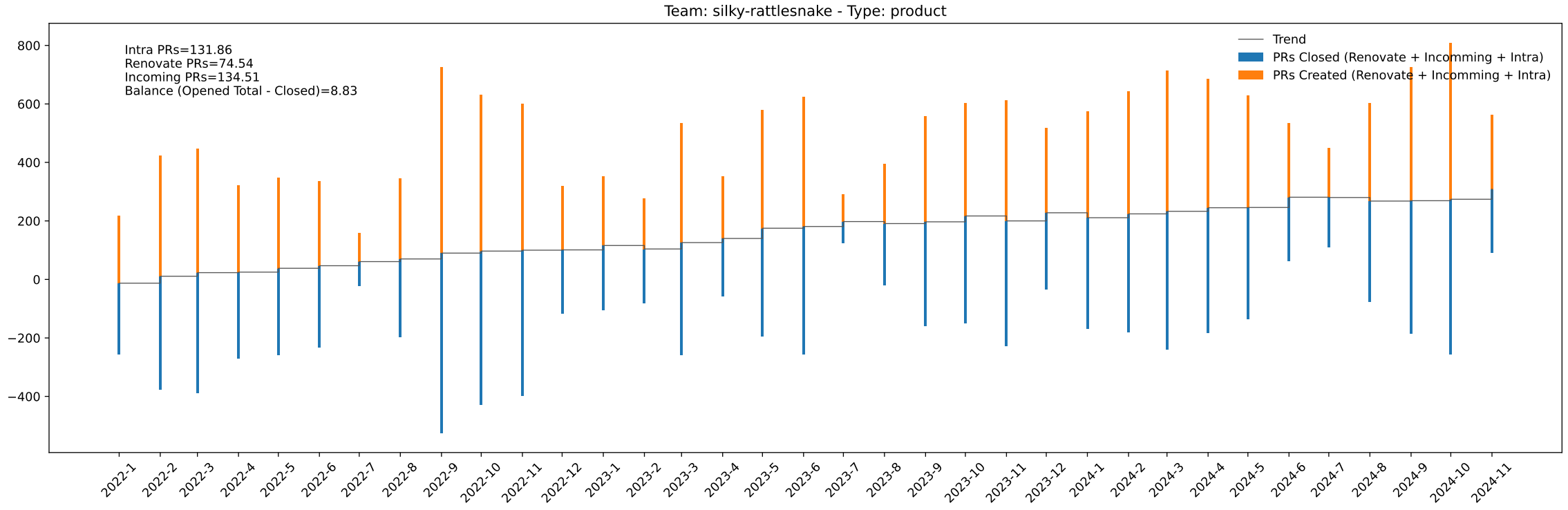

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