



The missing middle

Who employs the people who maintain research software?

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A harder question

You have just heard what research software is, and why it matters. So let me ask something else.

Ask any South African research institution:

Which research software does your work depend on?

Who maintains it?

What happens when that person leaves?

You will not get an (honest) answer.

When an external funder recently asked our own university a much easier question — what computational equipment do you have, how is it sustained, when is it replaced — we could not answer that either.

An astronomical digression: the survey is the software

Ninety seconds through my own discipline, and then I will stop talking about astronomy



The MeerKAT Telescope Array, South African Radio Astronomical Observatory

MeerKAT produces data that is inert on arrival.

- Calibration, imaging, source finding, cross-matching — the science happens in the data processing “pipeline”
- The software is not a tool used on the instrument. It is part of the instrument
- Reproducing a MeerKAT result means reproducing a pipeline, not repeating an observation

Every domain here has its own version of this.

Compute and curated data are not enough

Reproducibility is a software property before it is a data property

THE PIPELINE IS THE METHOD

A result is reproducible when the analysis can be re-run — not when the inputs have been archived. Data without the code that transformed it is a snapshot, not a method.

WORKFLOWS, NOT SCRIPTS

Modern analysis is dozens of steps, versions, containers and dependencies chained together. That chain is software, and it is the thing that has to survive.

AND NOW AI

Training code, model weights, prompts and inference pipelines are all software. A result that cannot be re-derived is a claim, not a finding.

NOT A NEW ARGUMENT, AND NOT ONLY MINE

Research software: a key (neglected) component of the digital research infrastructure ecosystem

van der Walt, Martin, Panji, Trusler, Vaccari & van Heusden · South African Journal of Science, 2025. South Africa has research software activity across many disciplines, and has largely stood outside the global research software movement — with a great deal to gain, and a great deal to contribute, by joining it.

It does not fail at the top or the bottom

Research software fails in the middle — and the middle is where nobody is looking

NATIONAL POLICY

Open Science Policy · NSTF Research Software Awards · ReSA and the OECD · the international RSE movement

THE INSTITUTION

No unit owns it. No post carries it. No budget line survives the end of the grant.

THE INDIVIDUAL

The code gets written — by researchers, students and research software engineers — and it works (for now)

Moving

Missing

Holding

PART ONE

Three realities

All three are about people and institutions, not technology

01

The sustainability gap is an employment gap

We talk about software dying. What actually happens is that a person leaves.

Software outlives the grant that created it. The post does not.

There is no career path — no job family, no promotion track, no title that describes the work.

So maintenance becomes goodwill: done after hours, by someone already assigned elsewhere, until they move on.

A worked example, and not a flattering one

The UCT eResearch Centre works with IT, Libraries, Faculties. The Research Software Specialist post in our current funding proposal would be the first dedicated research software post the university has ever had (centrally).

We are not unusual in this — we may only be unusual in having counted and making this statement.

02

Recognition without capacity

An unfunded mandate — everything below is right, and none of it makes anything possible.

THE POLICY

The 2026 Open Science Policy places real obligations on researchers to open data, code and outputs.

THE JOURNALS

Editors increasingly require the code behind the paper — and are right to.

THE AWARDS

The NSTF Research Software Awards, which this Centre helped to create, make the work visible at last.

Ask a researcher to deposit, document and maintain their code, and you have added a second job to someone who already has one.

An obligation is not a capability. Every requirement we place on researchers assumes an institution able to help them meet it — and that assumption is the thing that is missing.

03

Nobody is mandated to coordinate it

Research software falls between four sets of hands, each of which is holding something else

ICT SERVICES

Provide the infrastructure. Not resourced to make research judgements, and say so.

LIBRARIES

Own repositories, open access and preservation. Software sits at the edge of the remit.

RESEARCH OFFICES

Own outputs, compliance and reporting. Software arrives as a policy problem.

FACULTIES

Own the researchers and the grants. No route into institutional planning.

Every one of them contributes. Not one of them owns it.

This is not a failure of people — it is a gap in the organisational chart. And I would be surprised if it were not the same gap in most of the organisations represented here today.

PART TWO

Four things that would change it

One for each set of hands in this room.

Four changes, four audiences

None of these requires a new institution, and only one of them costs real money

1 INSTITUTIONS

One named post, with a budget line.

Not a project, not a fraction of somebody. A post is a policy; a project is a hope with an end date.

3 RESEARCH ORGANISATIONS

Build an inventory.

You cannot sustain what you cannot list. The cheapest item here, and the one that makes the rest arguable.

2 FUNDERS

Fund maintenance, not just creation.

Make software maintenance an eligible cost, and ask for a software management plan alongside the data management plan.

4 JOURNALS AND EVALUATORS

Cite software, and then count it.

Make it something a person can be promoted for. Recognition that does not reach a CV does not reach a career.

The same gap, at national scale

NICIS funds compute, connectivity and data. Research software falls between them.

WHERE IT SITS NOW

- NICIS is built around the CHPC, SANReN and DIRISA — cycles, network and data. Software is assumed, not funded
- The CHPC does some of this in practice, within its own mandate and its own capacity limits
- No national instrument exists that a researcher can apply to for software engineering effort

WHAT COULD WORK AT SCALE

- A call for research software engineering support — applied for as compute time is applied for
- A distributed research software centre, built on capacity universities already have rather than one new institute
- Funded pilots inside universities, to find what works before anything is standardised

The precedent already exists.

The funded tier-2 data-intensive facilities — ilifu among them — showed that a distributed, co-funded model works here. Research software needs its own version of that decision.

Listen for one sentence today

And for a different one tomorrow

TODAY

Nine organisations will describe research software they genuinely depend on.

As you listen, keep a tally of how often the answer to “who maintains this” turns out to be one person — and how often that person is funded by something that ends.

TOMORROW

The NRF, ReSA and the OECD will tell us what ought to be recognised.

On International RSE Day, that is the right conversation to be having. Recognition is the easier half, though — we are further along with it than with the capacity to deliver.

Both days are necessary. Neither is sufficient without the layer in between.

**South Africa has world-class research software
and nobody whose job it is to keep it alive.**

Who employs the people who maintain research software?

If this forum settles one question by tomorrow afternoon, let it be that one.



Thank you

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FURTHER READING

[Research software: a key \(neglected\) component of the digital research infrastructure ecosystem](#)

van der Walt A, Martin K, Panji S,
Trusler A, Vaccari M, van Heusden P
South African Journal of Science, 2025
doi.org/10.17159/sajs.2025/21437

Happy to talk about starting an inventory, a first research software post, or what a distributed centre would need.