

Software Containers in Australian Research Sector: ARCOS Community Building and Collaboration on SciDir – a Scientific Software Distribution Project

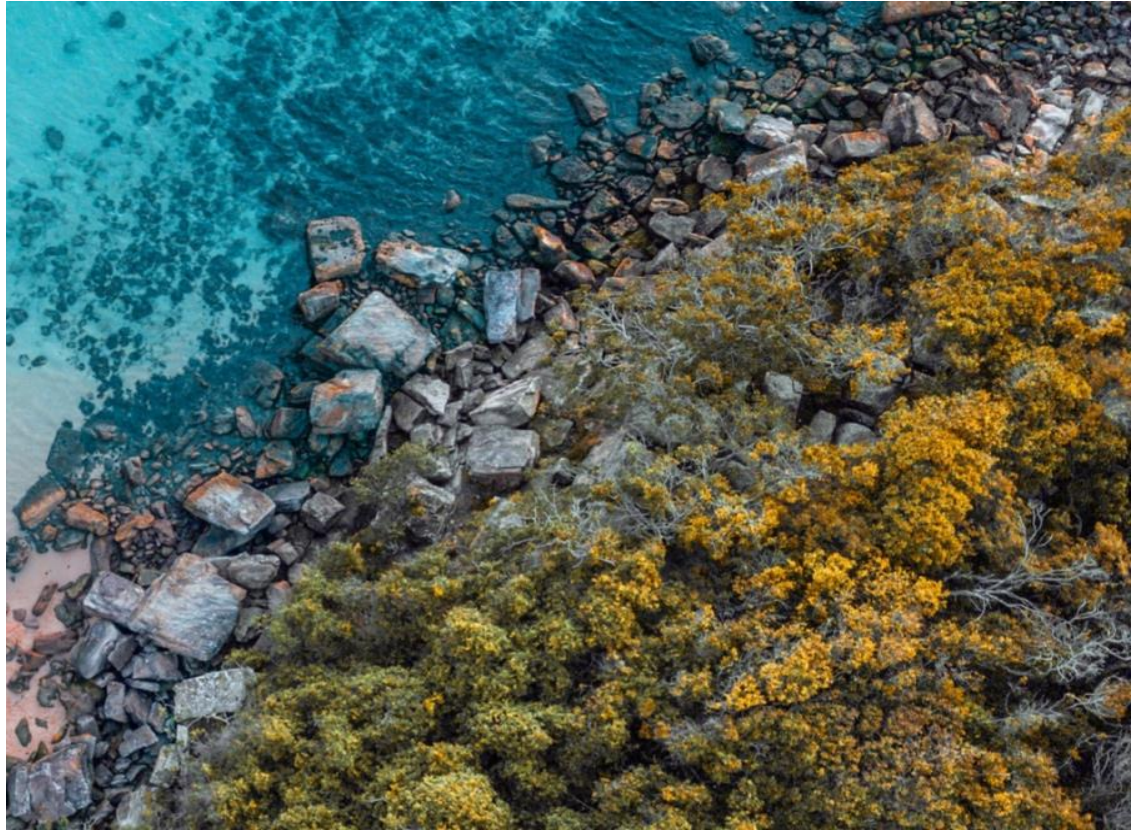


17 Oct 2023

PRESENTED BY
Dr Aleem Uddin

ACKNOWLEDGEMENT OF COUNTRY

We acknowledge and celebrate the First Australians on whose traditional lands we meet, and we pay our respect to their elders past, present and emerging.



AGENDA

- **Part I**
 - ARCOS Community overview
 - Activities Highlights
 - Shaping the future
- **Part II**
 - Collaboration on SciDir: A Scientific Software Distribution Project

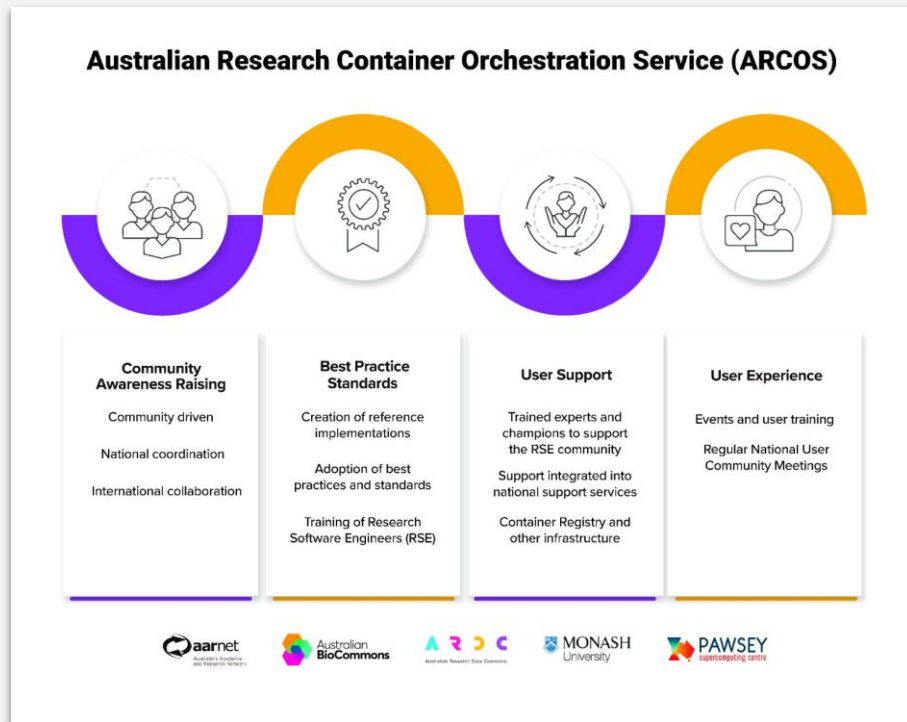
ARCOS Community Overview

Launched at the national Kubernetes workshop at the Pawsey Supercomputing Centre on 11 March 2020.

Addressing opportunities – reproducibility, portability, distribution, lower infra complexity and realise research platforms

Purpose: ARCOS is a community, driven by various national institutions with the aim of establishing a national Kubernetes service and promoting use of containers in research.

The infographic (Goals and activities) based on community consultation at eRA conference in 2020.



ARCOS Activities Highlights

Example Case Studies

Kubernetes @ TERN - Gerhard Weis

Kubernetes and Microservice Deployment
- Biosecurity Commons - Rob Cosgrove

AURIN's Internal Development Platform
- Umar Altaf

ARCOS Container Registry

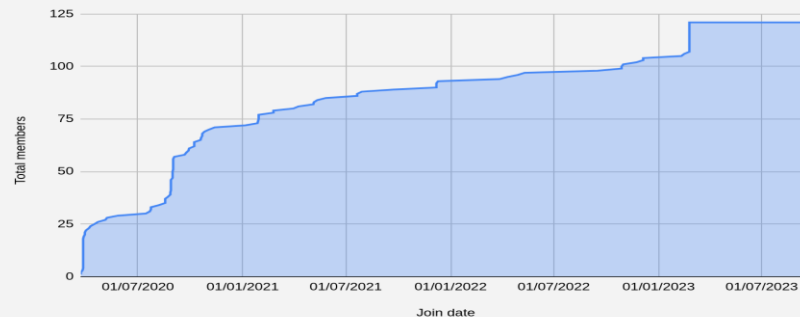
Based on Harbor project

Hosting containers from 10+ projects

Offering advanced features -
integrity, caching ..



Total members vs Join date



Membership growth graph

Skills upgrade - EOI'ed participants offered Linux Foundation vouchers to get K8s training and certification

104 Certification vouchers - 22 Organisations

104 Registered and started the training course

4 Certified Kubernetes Administrators (CKA)

1 Certified Kubernetes Application Developer (CKAD)

44 Approached via 1-1 survey

19 Provided feedback

Shaping the Future



Managed Kubernetes Service

Overcoming technical complexities and depth of tech knowledge !

How might we design a managed kubernetes service which eases research projects to adopt kubernetes?

What does it mean by having Managed Kubernetes Service? Is it team of specialists helping projects or is it an offering?

How can the ARCOS community be leveraged to make such a service successful?

What should infra providers such as ARDC or Pawsey do in order to make kubernetes adoption easy?

How can it be sustainably supported?

Skills Initiative

As an community effort, we have been offering Training and Certification vouchers to interested ARCOS members.

As skills upgrade plays major role in adoption of containers and Kubernetes in research sector, How can we improve on the skills initiative?

How can this help projects on the journey of Kubernetes adoption?

Which certifications are beneficial CKA, CKAD or the CKS? And do you recommend any other certifications?

Does certification provide some sense of confidence to RSEs as in professional development and ability to handle the project implementation?

How could ARCOS promote skills around containers in the research sector?

Hacky Sessions

Technical challenges are often prompted by ARCOS members ! A suggestion was to organise Hacky Sessions.

What is the format of Hacky session?

How can we foster collaboration through hacky sessions?

How can the community derive benefits by running hacky sessions?

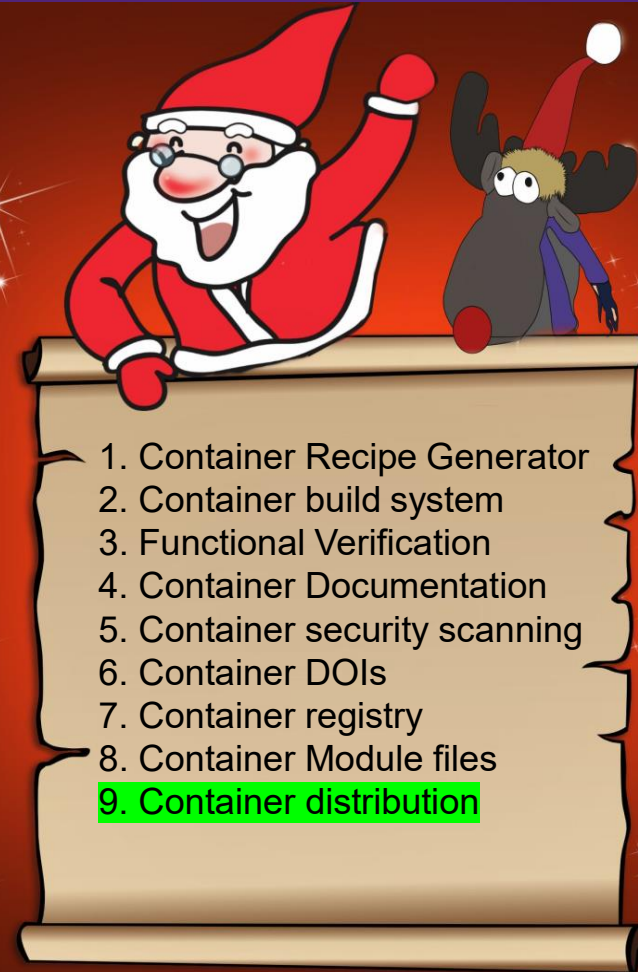
SESSION 2

Collaboration on SciDir



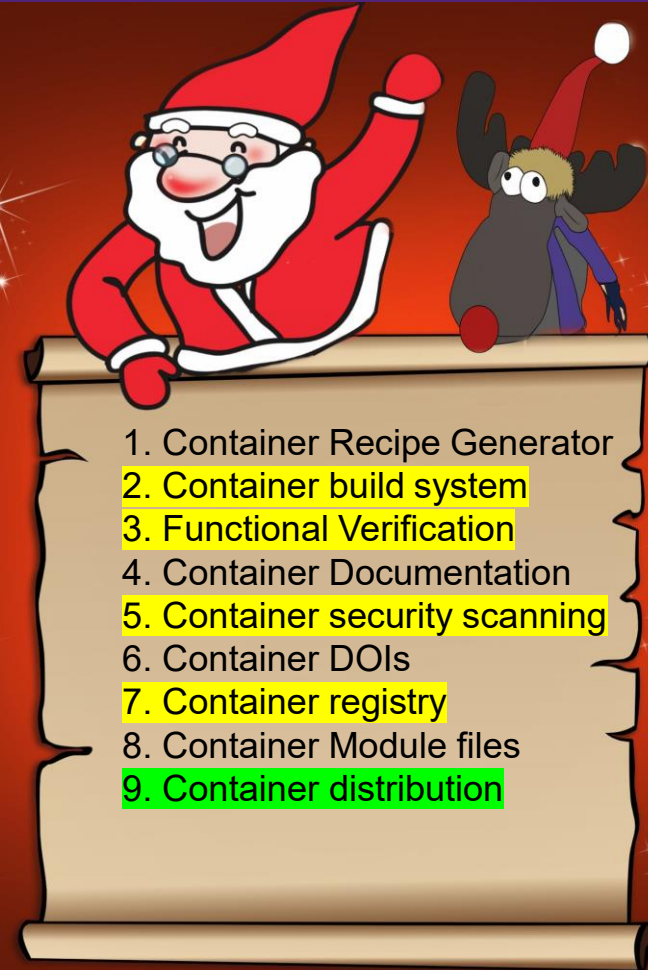
Proposed first phase

- Network of Stratum 1 servers in Australia hosted by AARNet & ARDC
 - These Stratum 1 servers distribute existing community operated Stratum 0 servers, such as
 - EESSI,
 - DRA,
 - Neurodesk,
 - Galaxy Project,
 - AARNet's Biocommons RNAseq repositories,
 - SHPC BioConda containers
- > Is there demand for a national service like this?



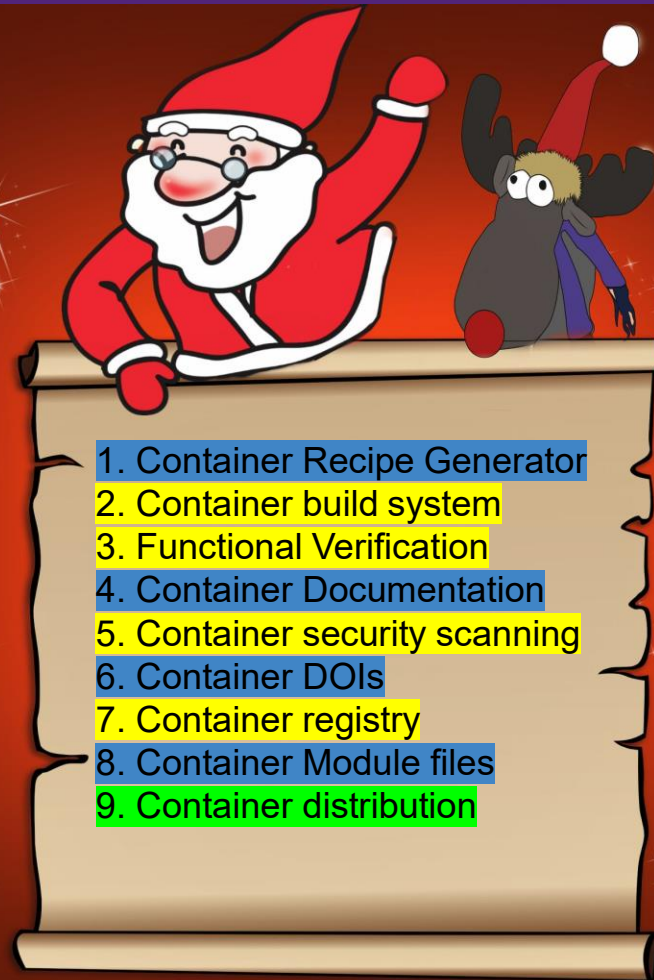
Proposed second phase

- building up a blueprint for a community to
 - build and test (functional+security) their own containers using
- Github actions + Nectar Cloud + Nectar Harbour registry + cvmfs stratum 0 setup



Proposed third phase

- making it easier to generate container recipes
- enabling the long-term archival of containers and DOI minting
- building up a tool registry for hosting metadata about containers + discovery
- improve generation of module files for HPC use cases



Governance

- ARDC ARCOS Technical Working group for coordination between communities?
- joint working group between ARDC/AARNet/QCIF/community representatives



Join the discussion, Tuesday 17th, 14.15-15.15

Boulevard B2

Enabling Platforms &
Services

Aleem Uddin & Greg
D'arcy

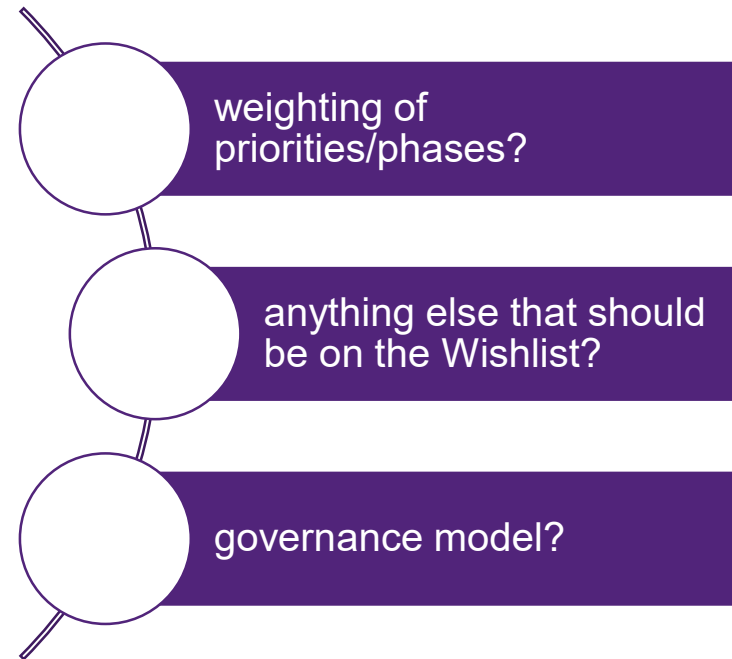
BoF Session

Software Containers in
Australian Research
Sector: ARCOS
Community Building and
Collaboration on SciDir – a
Scientific Software
Distribution Project

Aleem Uddin, Greg D'arcy,
Steven Manos, Mark Gray,
David Powell, Paul
Coddington, Jake Yip, Ping
Chen



<https://bit.ly/scidirpoll>





Subscribe to the
ARDC CONNECT
newsletter

THANK YOU



ardc.edu.au



contact@ardc.edu.au



[@ARDC_AU](#)



[Australian-Research-Data-Commons](#)



[ARDC_AU](#)