The SKA SRC and ESAP

Yan Grange

The square kilometre array for first-timers
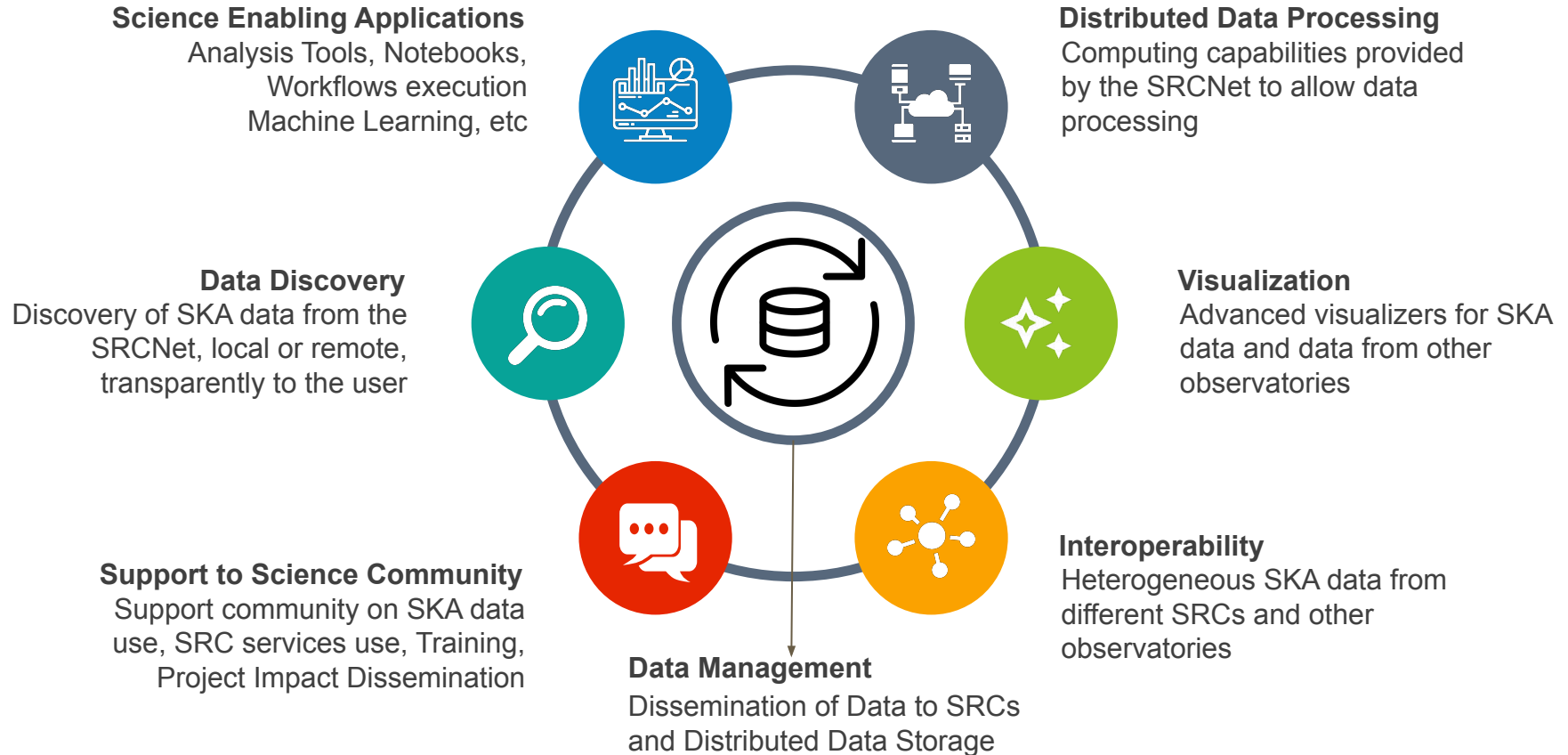
SKA data

Canada

Europe

China

India

South Africa

Australia

New Zealand

Pacific Ocean

Atlantic Ocean

Indian Ocean

Pacific Ocean
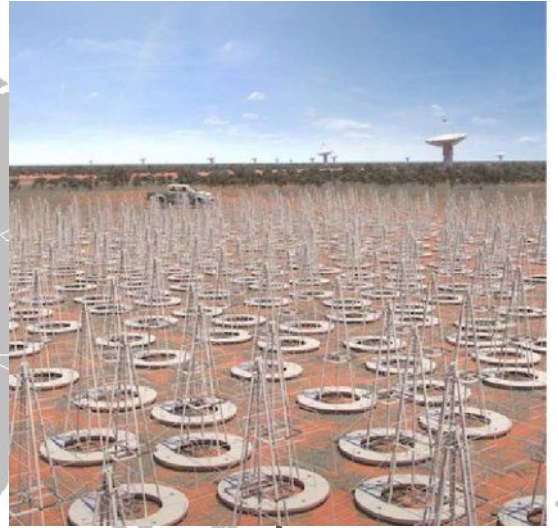
SKA Regional Centres (SRCs)
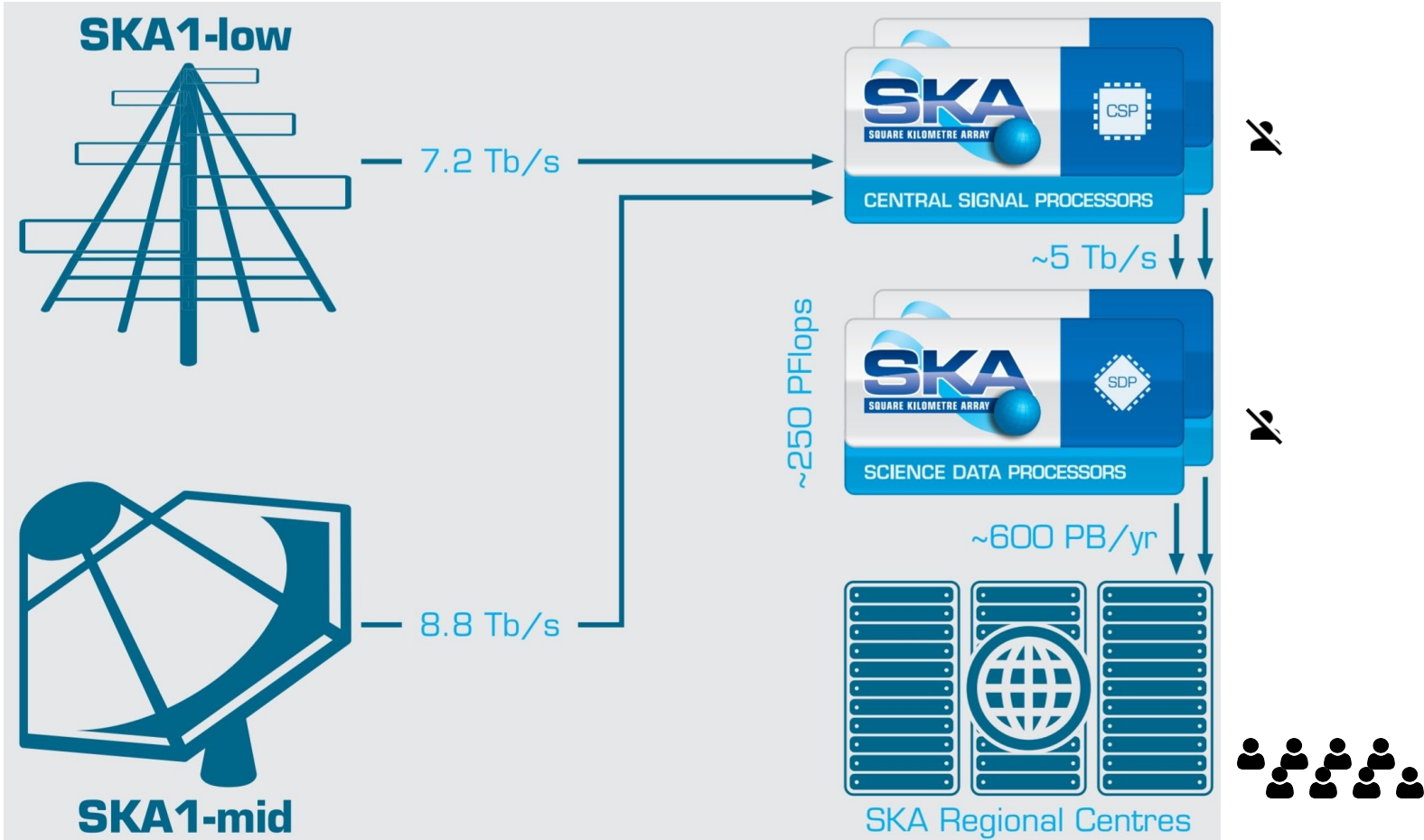
SKA Regional Centre Capabilities Blueprint

Science Enabling Applications
Analysis Tools, Notebooks, Workflows execution Machine Learning, etc

Distributed Data Processing
Computing capabilities provided by the SRCNet to allow data processing

Data Discovery
Discovery of SKA data from the SRCNet, local or remote, transparently to the user

Visualization
Advanced visualizers for SKA data and data from other observatories

Support to Science Community
Support community on SKA data use, SRC services use, Training, Project Impact Dissemination

Interoperability
Heterogeneous SKA data from different SRCs and other observatories

Data Management
Dissemination of Data to SRCs and Distributed Data Storage
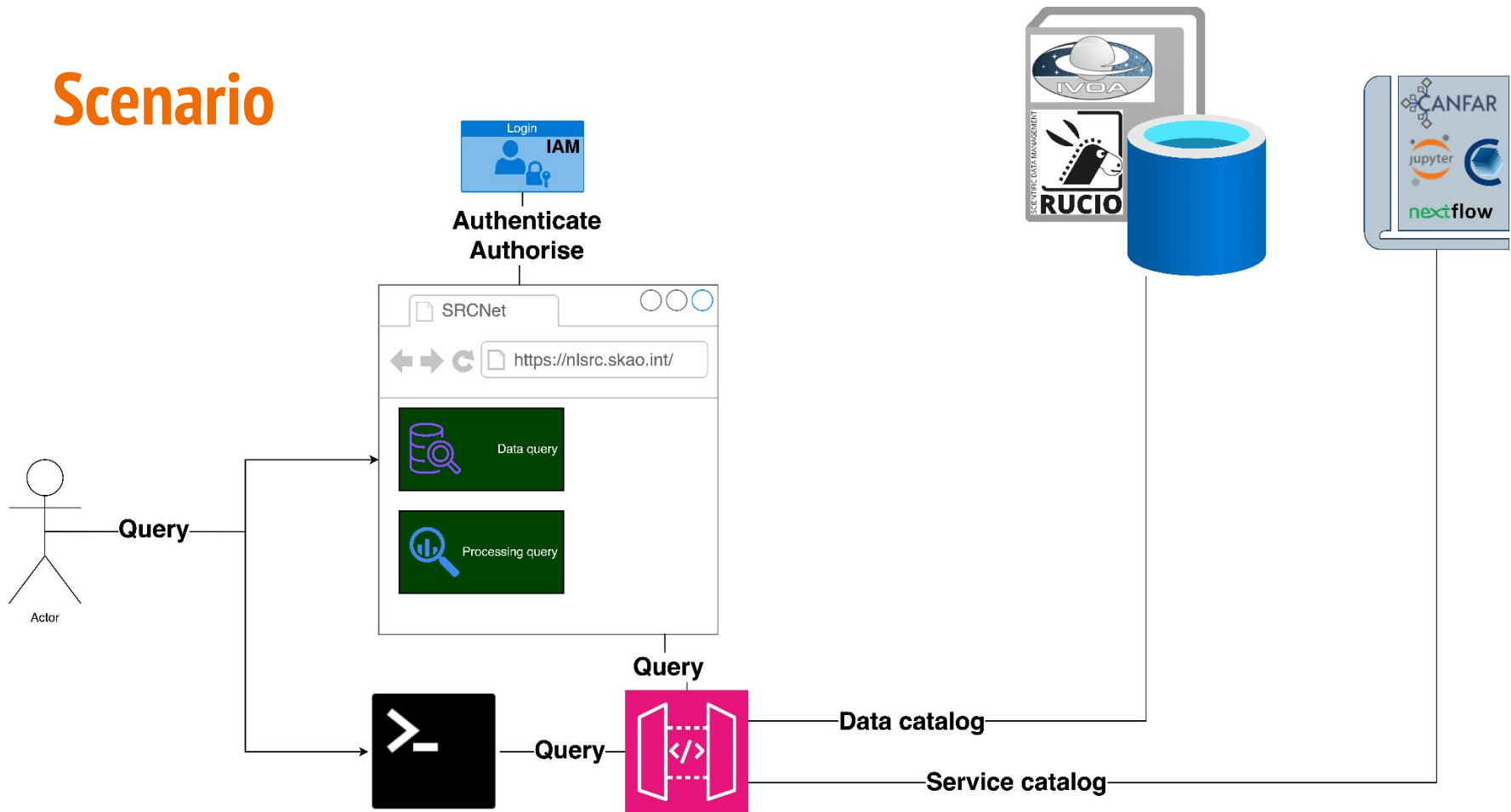
SRC Network global capabilities

Every node is an instance of the blueprint

Interconnections are done using agreed APIs, using FAIR and VO protocols where available

Collectively meet the needs of the global community of SKA users

Anticipate heterogeneous SRCs, with different strengths

Scenario

Disclaimer: Tool icons/names are examples rather than actual tech choices.

Prototype functionalities

- Assume the system is federated and heterogenic
- Query data product metadata based on source properties
- Query service metadata based on data and software implied req's.
  - Interactive processing
  - Visualisation
  - Batch processing
- Query software repository
- Provide user with link to analysis environment, with access to the data
  - MVP: copy pasting is ok.
  - Most functionality (notebooks, visualisation, batch processing) happens in backend systems.
  - provisioning through a backend system API?

ESAP

- ESAP API gateway supports federation and heterogeneity
  - Stateless API? How does that map on the Django design?
  - REST APIs very useful
  - Already has been shown to connect to IAM, VO standards and Rucio (which all play a role in the prototype)
  - The current repo contains quite some bits that are probably less relevant to us (see next slide).
  - Connection to service query API (which is currently prototyped as REST API), and adding a services API endpoint to ESAP needed (planned for next three months increment)
- ESAP GUI
  - Implementing our own user interface, which communicates with the API

SRC | Net
SKAO Regional Centre Network

Home | Search catalogue | Visualise data | Notebook | Workflow | Files | Terminal | VMs | TangerineNET

Kevin Tai **KT**

Project 1
Project 2
Project 3

Filter

Select database ▼

Search by name

Search by observation id

RA | DEC

Radius (Arcsec)

```
SELECT sources.src_name,
sources.ra, sources.dec,
observations.observation_length,
observations.uri
FROM sources INNER JOIN
observations ON
(sources.id =
observations.source_id)
SORT BY sources.src_name
```

Search | reset filter(s)

| Cubes (100) | Visibilities (0) | Other (0) |

Action

Results (100)

☐	Name	RA	DEC	Collection	Instrument
☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif
☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif
☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif
☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif
☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif
☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif
☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif
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☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif
☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif
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☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif
☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif
☐	s1320+6041	199.242352342342	59.343413239132	apertif-dr1	Apertif

1 of 10 selection(s)

1 OF 10

SKAO

Collaboration on ESAP

- Right now we copied the ESAP repo because we want to remove stuff, and add other
- Having a shared core repo with core functionality would be great
  - Do we foresee issues in finding common features?
- UI seems like something we'd all customise.
  - Any collaboration effort on this?
- Handling and forwarding of AAI (i.e. I am logged in to ESAP and want to access data that needs authorisation).
  - Any interest in collaboratively thinking about this?