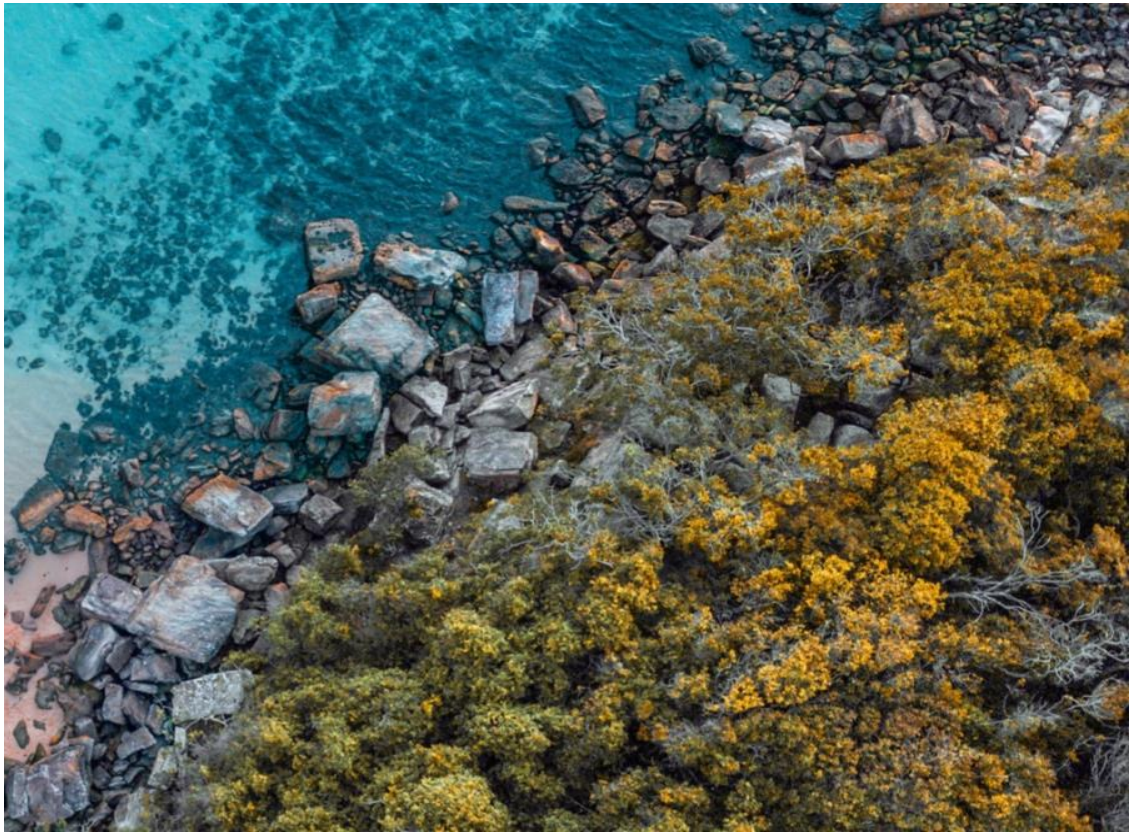
Capturing ARDC's Impact

PRESENTED BY

Liv Shanahan - ARDC PMO Lead

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.



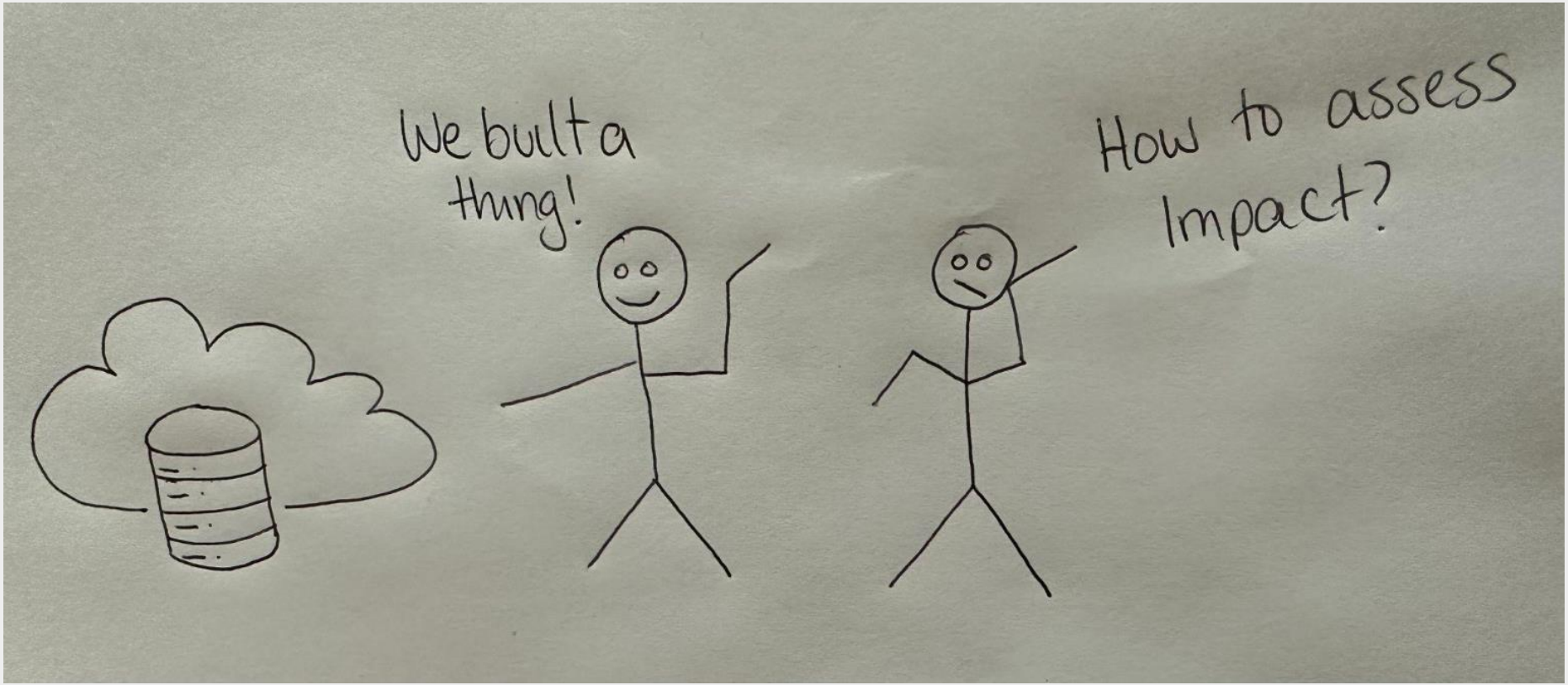
The what and why of Impact

Why should we plan, measure and evaluate impact?

- Accountability
- Allocation
- Analysis
- Advocacy

"An effect on, change or benefit to the economy, society, and environment, beyond those contributions to academic knowledge"
– CSIRO

"Intended and unintended long-term effects of activities using the resources or outputs of a research infrastructure or work performed by research infrastructure staff"
– Griniece, E, et.al, RI-PATHS


We built a thing!
How to assess Impact?

Does your organisation plan, measure and evaluate the impact of its projects/programs?

Sign up here if you have an interest in joining an informal impact community

http://bit.ly/3M3HLYt

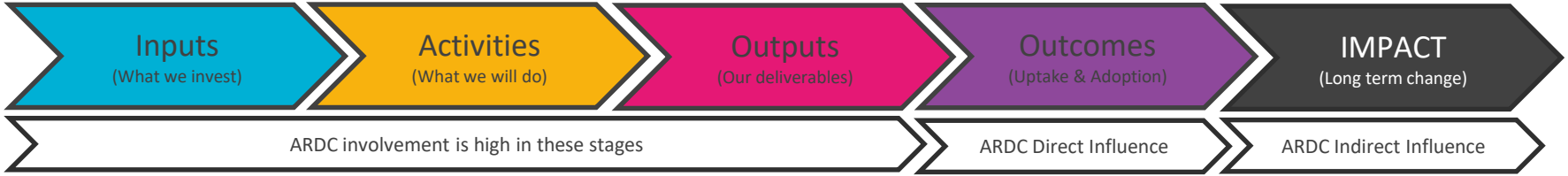
Australian Research Data Commons

NCRIS National Research Infrastructure for Australia

ARDC is enabled by NCRIS

CSIRO's Impact Framework

CSIRO's Impact Management Framework
Derived from the work of the W.K. Kellogg Foundation



- Funding
- Capability (ARDC & Partners)
- Foundation Infrastructure
- National & International collaborative capability networks
- Background IP
- Existing Social Licence to Operate/Trust
- Strategies,plans, & supporting documents

- Develop/Deliver National Scale Data Infrastructure and Services
- Standards, Frameworks and Models
- Capacity and Capability Development
- Policy/Strategy Advice
- Partner project Design and Management
- Communication & Engagement
- Monitoring and Evaluation

- National Scale Data Infrastructure
- Standards, Frameworks, & Models
- Skills and Training
- Policy/Strategy
- Partner Co-Investment Projects
- Communication & Engagement
- Monitoring & Evaluation

SHORT TERM

- Building awareness opportunities
- Capacity and capability change
- Data infrastructure uptake and adoption

MED TERM

- Policy/Strategy change
- Capability, Capacity, & Practice Change
- Reputation and trust

LONG TERM

- Policy/Strategy Change
- National Scale Capacity/ Practice Change
- Reputation & Trust

ECONOMIC

- Sustainable economic development/growth of Australian industry
- Improved ROI across health systems through more effective and efficient delivery of health services

ENVIRONMENTAL

- Protection/restoration of Australia's natural environment

SOCIAL

- Improved health care and outcomes
- Enhanced knowledge generation/sharing capacity for Australian research sector

Years 2023 – 2028 | Years 2025 – 2035

INPUTS
What we invest

Funding
- NCRIS
- Partners

Capability (ARDC & Partner)
- Data Science
- Systems analysis
- Data management
- Informatics
- Governance
- Solution Architecture
- AI/ML
- Policy development
- Communication & engagement (& other ARDC support function capability)
- Indigenous Data Governance

Foundation Infrastructure
- Nectar
- Informatics services (RDA/RVA/RLA/PIDs)

National & international collaborative capability networks

Background IP
- Data
- Intelligence

Existing Social Licence to Operate (SLO)/Trust

Strategies, Plans, & Supporting Documents
- ARDC Strategy
- Planet RDC RIIP2 submission
- Planet RDC Position Statement & draft program strategy
- Planet RDC Communication & Engagement Strategy
- Planet RDC Implementation Plan

ACTIVITIES
What we do

Develop/Deliver National-Scale Data Infrastructure & Services
- Provision of sustainable & secure Digital Research Infrastructure to support the development of analysis, modelling & decision-support infrastructure across the environmental & earth science sectors
- Coordinate across key stakeholders/communities (NRIs, Govt, key research programs) to strategically select datasets for integration & access, & tools for analysis & modelling, based on priority national earth & environmental challenges.
- Develop/implement common services & core platform infrastructure to support national integration & use of cross-sector (research, government, industry), multi-disciplinary, multi-format (e.g., tabular, imagery, audio, spatio-temporal) earth & environmental data
- Define architectures & data flows for cross-sector sharing & reuse of data, models, & decision tools
- Curate temporally integrated geospatial datasets
- Integrate compute, storage infrastructure & services with analysis platforms & tools to provide seamless access for users
- Collaborate with People RDC to provide sensitive data access services for EES
- Develop the Planet RDC portal infrastructure to deliver a single point of access to data, tools, storage, & compute for EES researchers & other users
- Engage with domain experts to support data infrastructure development
- Gather/analyse user needs/requirements data
- Deliver informatics services (incl. data discovery, vocabularies, identifiers, semantic tools, etc.) for earth & environmental data
- Develop Planet RDC Implementation Plan

Standards, Frameworks, & Models
- Audit of existing data & metadata standards & vocabularies to establish if they are fit for purpose
- Develop best practice guidelines on data quality, provenance, & trusted repositories for earth & environmental data
- Facilitate consensus on agreed standards & best practices for data, metadata, vocabularies, data exchange, quality, provenance, trusted repositories.
- Develop data governance frameworks for EES data
- Develop CARE implementation guide for NEESFF
- Create FAIR implementation profiles for different EES disciplines
- Develop data models for federated EES data discovery & access

Capacity & Capability Development
- Develop & implement skills & training frameworks for EES researchers & practitioners
- Establish/coordinate communities of practice

Policy/Strategy Advice
- Develop/disseminate (with stakeholders) white/green papers on relevant topics (e.g., CARE principles for NEESFF, Developing an Authoritative Spatial Data Service for Australia, Trust & Identity frameworks for NEESFF, including providing access to sensitive earth & environmental data, etc.) to support policy & practice change

Partner Project Design & Management
- Develop projects in conjunction with partners to produce reusable analysis tools & models, integrated data assets, etc.
- Co-design projects with Indigenous communities
- Partner project management & monitoring (incl. investment)

Communication & Engagement
- Develop & implement a communication & engagement strategy (incl. potential users of new tools/data)
- Engagement with Indigenous communities
- Consult with stakeholders re: Planet RDC direction, policy advice, future program opportunities, etc.
- Engagement with Government Departments to secure MOUs relating to data supply chains

Monitoring & Evaluation (M&E)
- Develop & implement an effective M&E Plan

OUTPUTS
Our deliverables

National Scale Data Infrastructure
- Sustainable & secure data research infrastructure – specifically, underpinning core platform infrastructure that will support partner-delivered analysis, modelling, & decision-support tools
- National Machine Based Observation Data (Images, Acoustics, Video, Sensor) Infrastructure & Pipelines
- Curated, integrated, & FAIR environmental datasets
- Spatial Data Services
- Planet RDC Portal (incl. data & tool discovery & access)
- Informatics services
- Planet RDC Implementation Plan

Standards, Frameworks, & Models
- Agreed & published (Inter)national standards or best practice guides (for data, metadata, vocabularies, data exchange, quality, provenance, etc.)
- FAIR implementation profiles (FIPs) for specific disciplines
- Standards Audit Report
- Data governance frameworks (incl. Indigenous data governance/sovereignty frameworks)
- CARE implementation guide

Capacity & Capability
- Skills & training frameworks
- Provision of advice
- Communities of practice

Policy/Strategy
- White/green papers on CARE, Spatial Data, etc.

Partner Co-investment Projects

Communication & Engagement
- Communication & engagement strategy & associated materials
- MOUs with Government Departments

Monitoring & Evaluation (M&E)
- M&E Plan
- M&E Reports

OUTCOMES
The uptake, adoption or consumption of our work

Short Term Outcomes

Building Awareness/Opportunities
- Growing ecosystem of engaged key partners for knowledge sharing to influence policy & cross-sector systemic behavioural change
- Increasing recognition of the need for, & the commencement of, breaking down of intra- & cross-sector silos, supported by increased application of key best practice standards & frameworks
- Key government, industry, & research sector stakeholders acknowledge the quality of Planet RDC integrated datasets & decisions support tools
- Partner project deliverables support/contribute to Planet RDC objectives

Capacity & Capability Change
- Enhanced interoperability of data across domains/disciplines/sectors
- Increased skills among stakeholders in key areas (e.g., FAIR data)
- Agreed approach to Indigenous data governance (incl. Indigenous representation) by NEESFF partners
- Data governance frameworks adopted by relevant stakeholders
- New methods of data analysis (e.g., AI/ML) applied to integrated datasets

Data Infrastructure Uptake & Adoption
- Researchers share &/or reuse environmental data to support multidisciplinary research, improving both the efficiency of research processes, & the efficacy of research outputs
- Uptake of agreed (inter)national standards or best practices for data, metadata, vocabularies, data exchange, quality, provenance, etc.
- Integrated environmental datasets & decision support tools made accessible by Planet RDC are used by Government, Industry, & the research sector to address national environmental challenges

Medium Term Outcomes

Policy/Strategy Change
- Environment policy developed across relevant jurisdictions informed/supported by science based on trusted data supply chains
- Industry utilises research drawing on integrated datasets (& associated models & decision tools) to support strategic & operational change aimed at ensuring ongoing sustainability in the context of ESG requirements

Capability, Capacity, & Practice Change
- EES research practice is transformed (e.g., through new methods, cross-sector/multi-disciplinary collaboration, adoption of standards) by seamless access to data infrastructure, tools, & platforms including across NRIs/NEESF
- Researchers independently contribute to the further development of the Planet RDC (e.g., through the contribution of tools to the platform)
- Trusted data supply chains operating – effective cross-sector sharing/reuse of data, models, & decision tools to support research, reporting, policy & industry needs (e.g., for policy development, land & sea management practice enhancement, environmental protection/restoration workflows, industry transition to 'greener' practices, etc.)
- FAIR data, software, & platforms implemented by Research, Government & Industry
- CARE principles implemented across NRI
- Stakeholders upskilled in indigenous data governance approaches

Reputation & Trust
- Enhanced reputation & trust of the ARDC among earth & environmental ecosystem stakeholders (incl. Indigenous communities)

Long Term Outcomes

Policy/Strategy Change
- Evidence-based policy enacted that supports government & industry to address key national environmental challenges
- Effective investment decision making & leadership by government & industry to support the protection & enhancement of Australia's natural environment

National scale capacity/ practice change
- Cross sector, multidisciplinary data collaborations & leadership at the national scale
- Improved land & sea management practices by both public & private stakeholders in collaboration with affected communities at a national scale
- National data infrastructure supports effective continental-scale environmental monitoring by government & relevant industry stakeholders
- Effective, ethical, & appropriate participation of Indigenous communities in decision making about, & management of, country
- Transition of Australian industry to more environmentally sustainable practices

Reputation & Trust
- Increased public trust in environmental data, & the research & decision-making processes based on that data
- Increased public advocacy for change based on trusted environmental data/research

IMPACTS
Benefits to eco, environ, soc

ECONOMIC
- Sustainable economic development/growth of Australian industry (incl. the agriculture sector)
- Protection/enhancement of Australia's environmental tourism industry

ENVIRONMENTAL
- Protection/restoration of Australia's natural environment:
  - Reversal of ecosystem deterioration
  - More effective response to, & recovery from, natural disasters & hazards which affect the natural environment
  - Protection/enhancement of biodiversity
  - Protection of threatened species
- Reduction in environmental impact of targeted industries

SOCIAL
- Increased safety/resilience of communities in the context of environmental & climate related changes
- Improved quality of life for Australians (through healthier, more sustainable natural environments)
- Maintenance/enhancement of Indigenous Data Sovereignty (CARE principles)
- Protection/enhanced recognition of Indigenous culture & heritage
- Enhanced employment opportunities in new & transitioned environmentally sustainable business/industries
- Enhanced knowledge generation/sharing capacity for the Australian research sector

INTEGRATED
- Sustainable food value chains

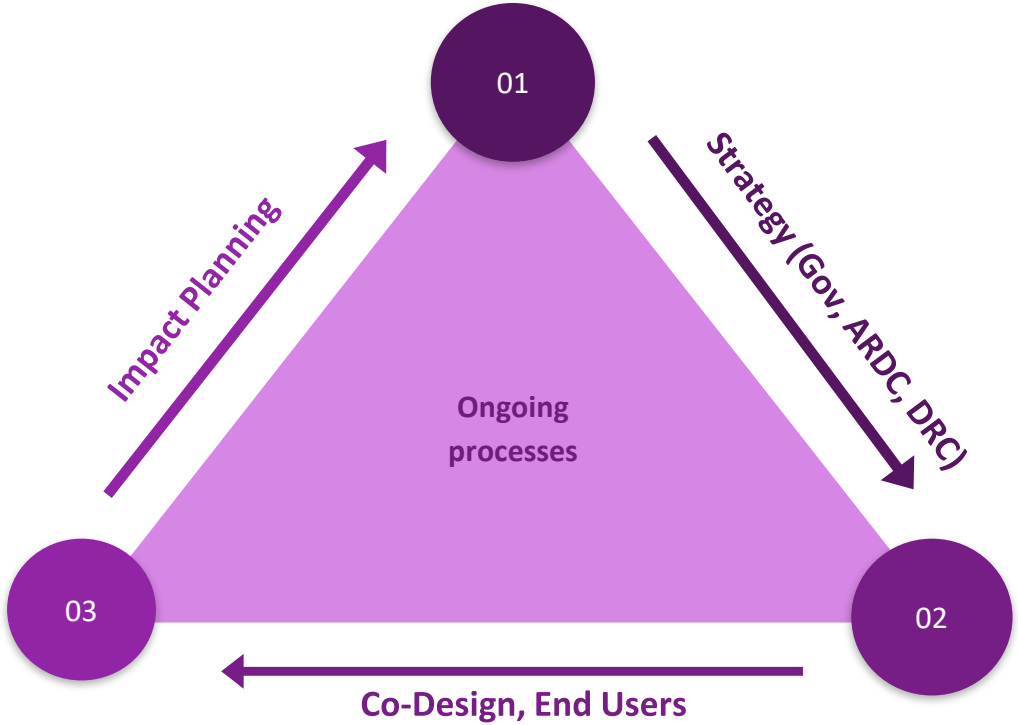
Developed with assistance from Thomas Keenan at Tractuum

Other elements of our Impact Framework

- **Assumptions**
- **Risks**
- **Counterfactual**
- **GrIMPACTS**

Some further thoughts…

- It is not static
- it is not a panacea
- **Is not a prediction of impact**
- Can be an asset to an evaluation



Underpinned by embedding M&E processes and opportunities for review & refinement

What's worked well

- ✓ Worked with an impact specialist, Dr Thomas Keenan, Tractuum (workshops, consolidating ideas, asking probing questions etc.)
- ✓ Mixture of in person and online workshops
- ✓ Adapted process depending on RDC/program stage
- ✓ Engaging a broad representation of ARDC staff. Program managers, operations, data specialists,
- ✓ Back to basics with whiteboard boards/ sticky notes

Challenges

- Finding a time to get everyone in the room together
- Online workshops more challenging
- Ensuring dedicated staff have time/resources available

What Next?

- Embedding impact in key organisational processes
- Impact culture
- Monitoring and evaluation of KPIs (indicators and metrics)

Boulevard B2
BoF Session

Understanding and capturing the uptake of Digital Research Infrastructure

Stefanie Kethers, Sheida Hadavi, Kylie Black, Mihail Staicu, Lesley Wyborn

Next steps

PMO could benefit from learning from other organisations working to plan, monitor and evaluate their impact.

Sign up here if you have an interest in joining an informal impact community

http://bit.ly/3M3HLYt

Subscribe to the **ARDC CONNECT** newsletter

THANK YOU

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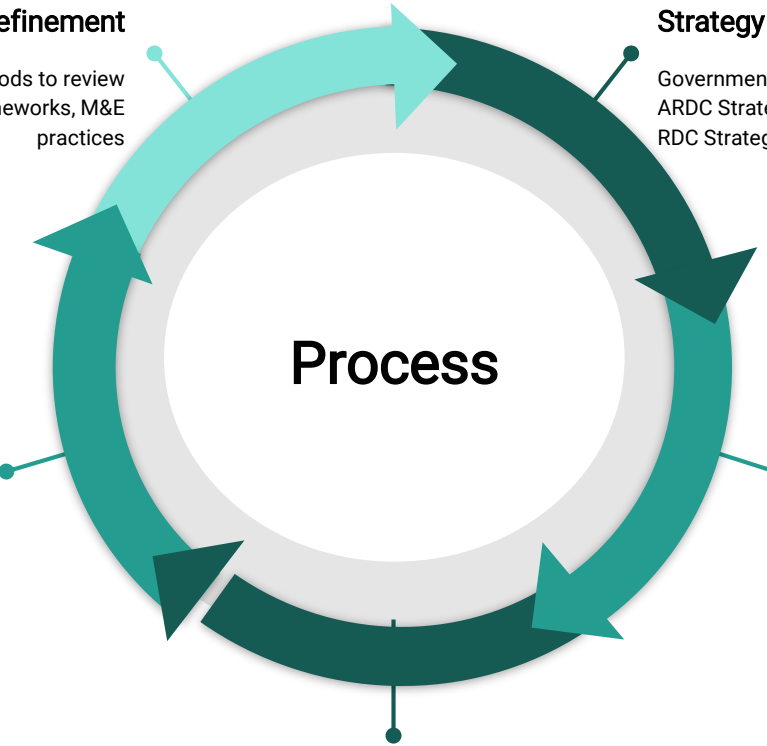
NCRIS National Research Infrastructure for Australia

ARDC is enabled by NCRIS



Review & Refinement

Regular review periods to review and update our frameworks, M&E practices

Strategy

Government, National Priorities
ARDC Strategy
RDC Strategy

Monitoring & Evaluation & Communication

Embedding M&E practices into program and project governance
Communicating end of project/program outcomes
Planning for longer term impact evaluations

Co-Design / End Users

Defining Scope, Purpose, End User Needs
Stakeholder perspectives

Impact planning

Identifying Impacts, outcomes, outputs, activities and inputs
Risks, Issues, Counterfactual

Delivering Impact through ARDC's Strategy

OUR PURPOSE

To provide Australian researchers with competitive advantage through data.

OUR MISSION

To accelerate research and innovation by driving excellence in the creation, analysis and retention of high-quality data assets.

Impact Stakeholders

Researchers

Researchers
from any discipline

(academic, but also
government and industry)

People who work with researchers

Infrastructure providers

Universities / Research Institutions

Data Managers

Trainers

Librarians

eResearch / Research
Support Offices

Key stakeholders

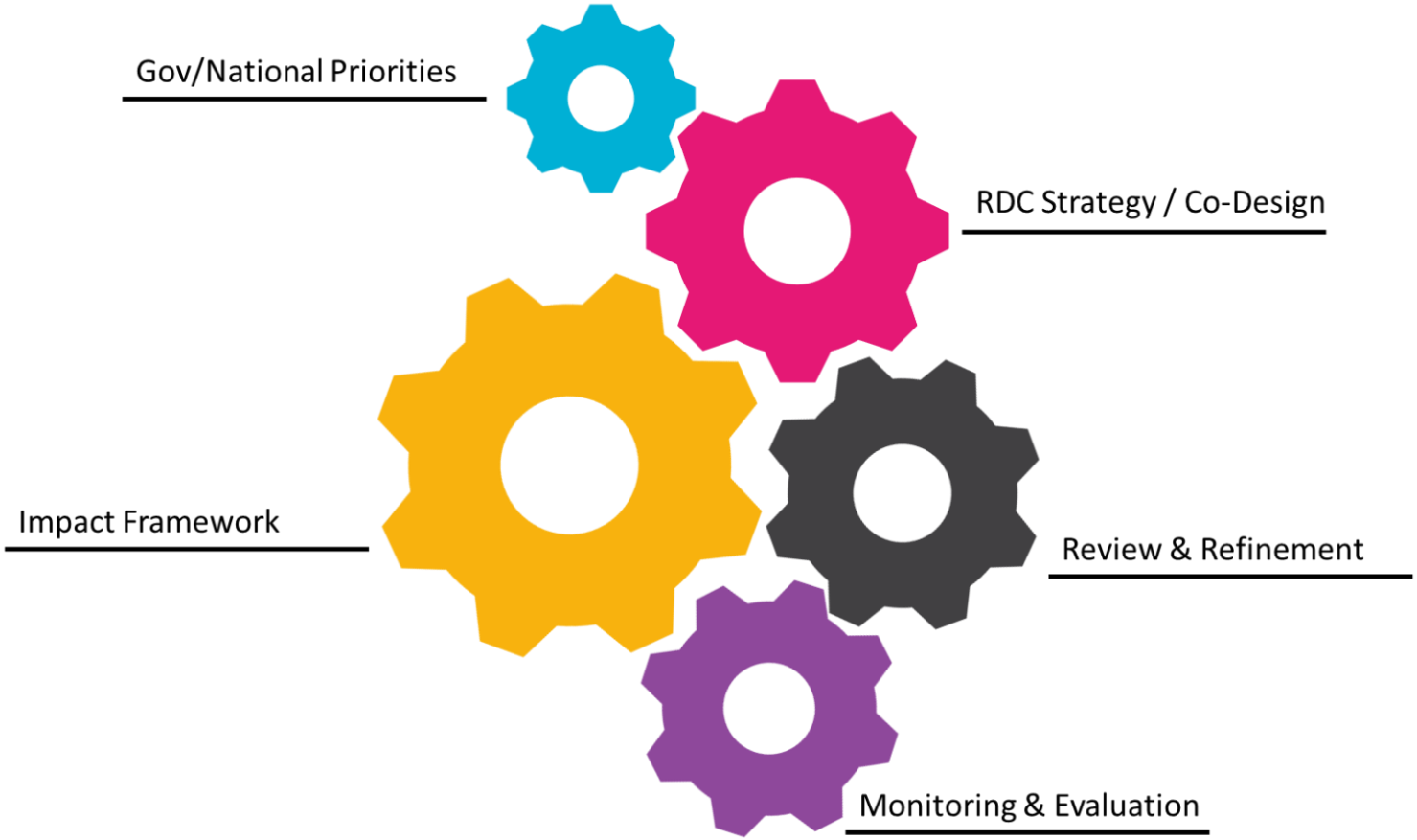
Australian Government
Department of Education (funders)
/ NCRIS

Government / Policy

International Data Organisations

National Data Organisations

ARDC Members



Outcomes

SHORT TERM

Building awareness opportunities

- Engagement
- Acknowledgement

Capacity and capability change

- Increased skills
- Agreed approaches
- Adoption of frameworks
- New methods

Data infrastructure uptake and adoption

- Sharing and reuse of data
- Uptake of standards, best practices
- Integrated datasets

MED TERM

Policy/Strategy change

- Policy developed across relevant jurisdictions
- Industry utilising research

Capability, Capacity, & Practice Change

- Seamless access to data infrastructure, tools & platforms
- Trusted data supply chains
- FAIR data, software, & platforms implemented by Gov, Research, Industry
- CARE principles

Reputation and trust

LONG TERM

Policy/Strategy Change

- Evidence based policy enacted to address gov & industry national challenges
- Effective investment decision making and leadership

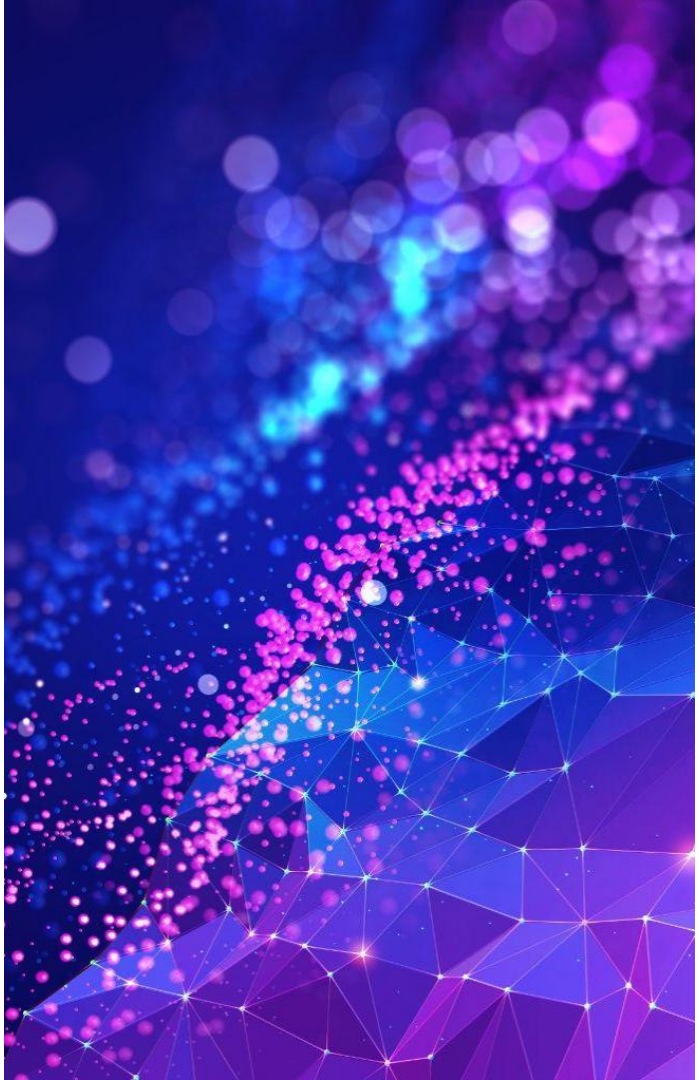
National Scale Capacity/ Practice Change

- Cross sector, multidisciplinary data collaboration and leadership
- National data infrastructure supporting national scale research

Reputation & Trust

- Increased public trust in data, & research & decision-making processes based on that data

International examples



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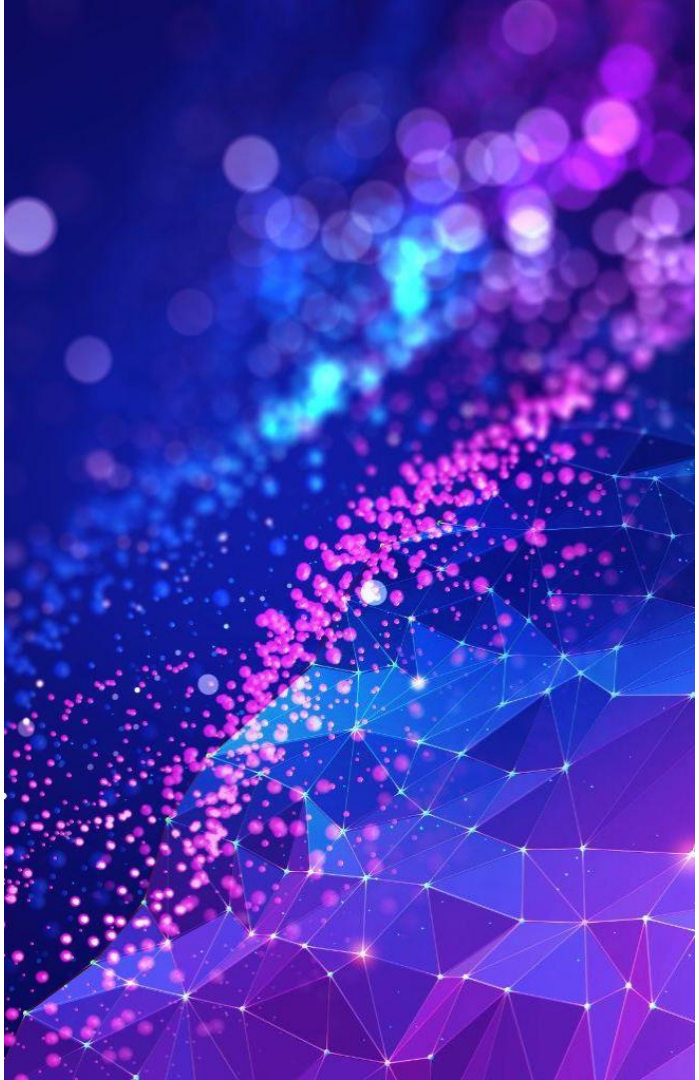

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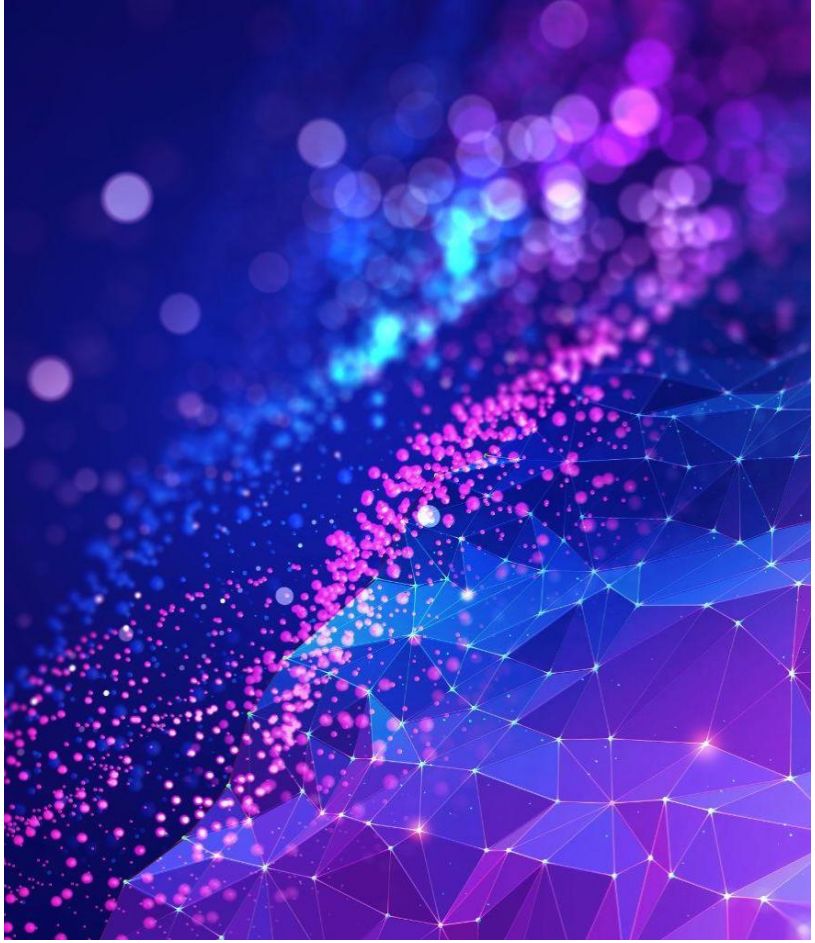

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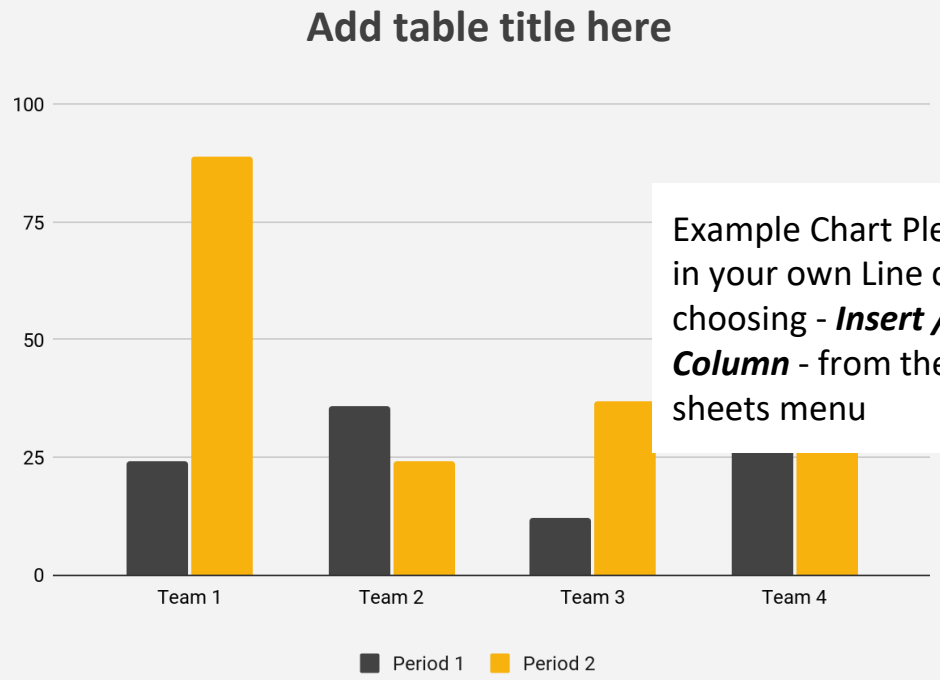

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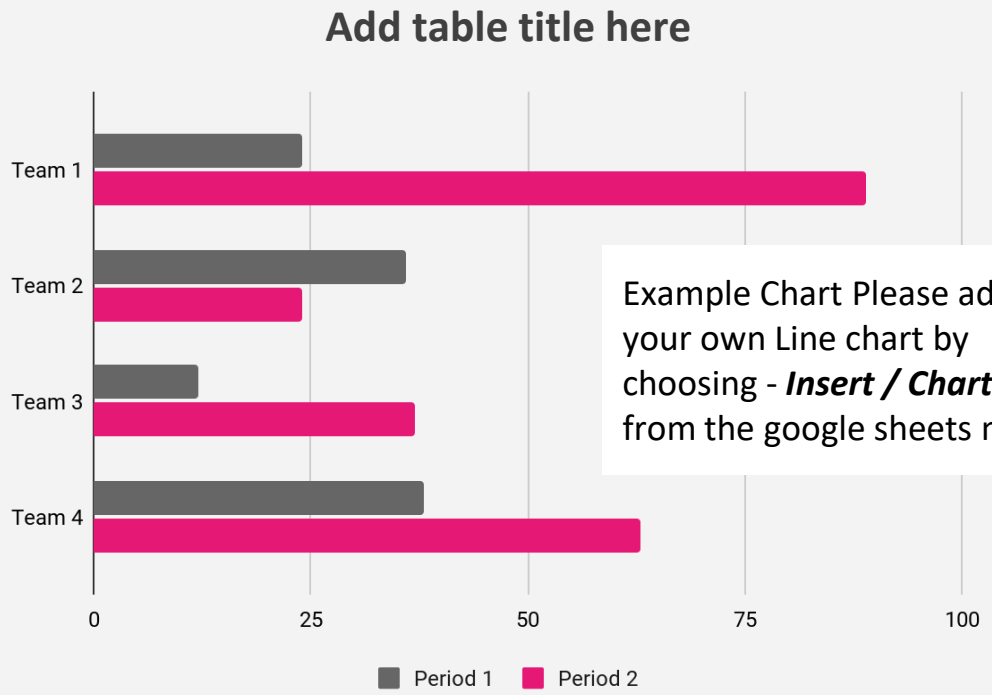

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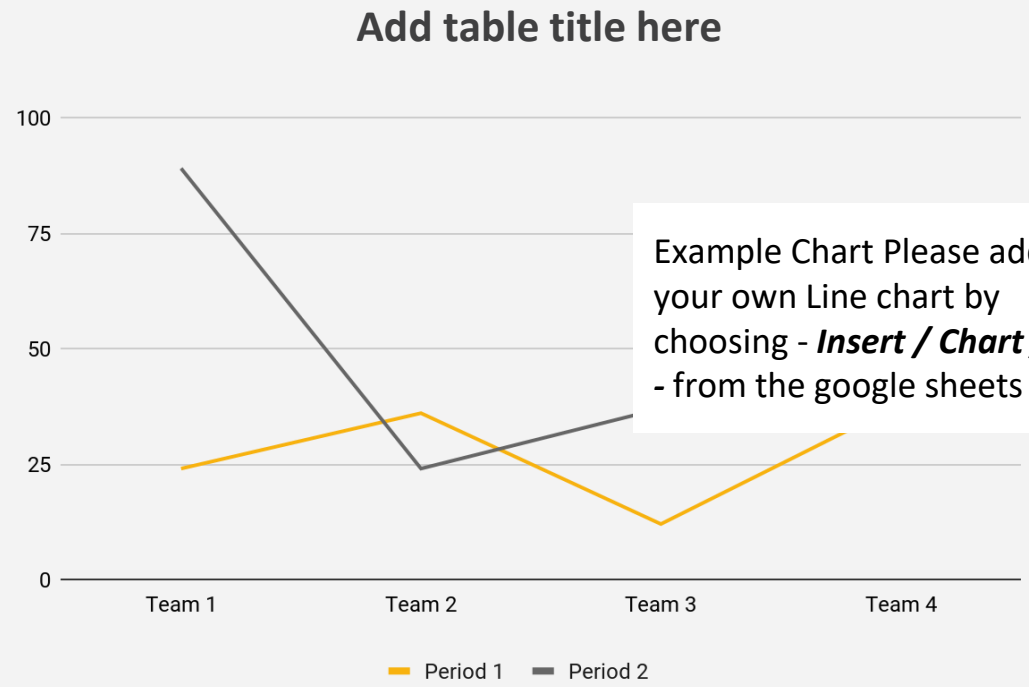

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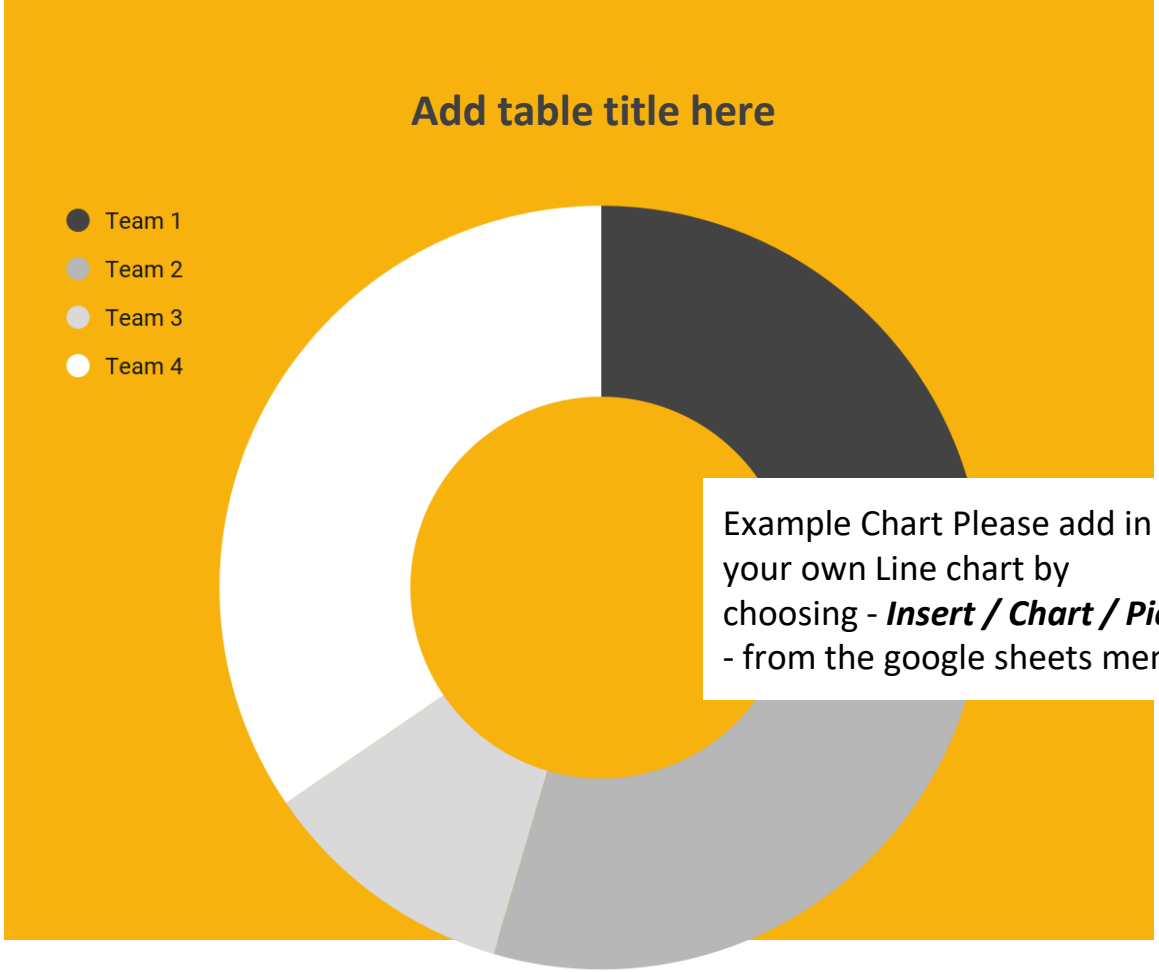

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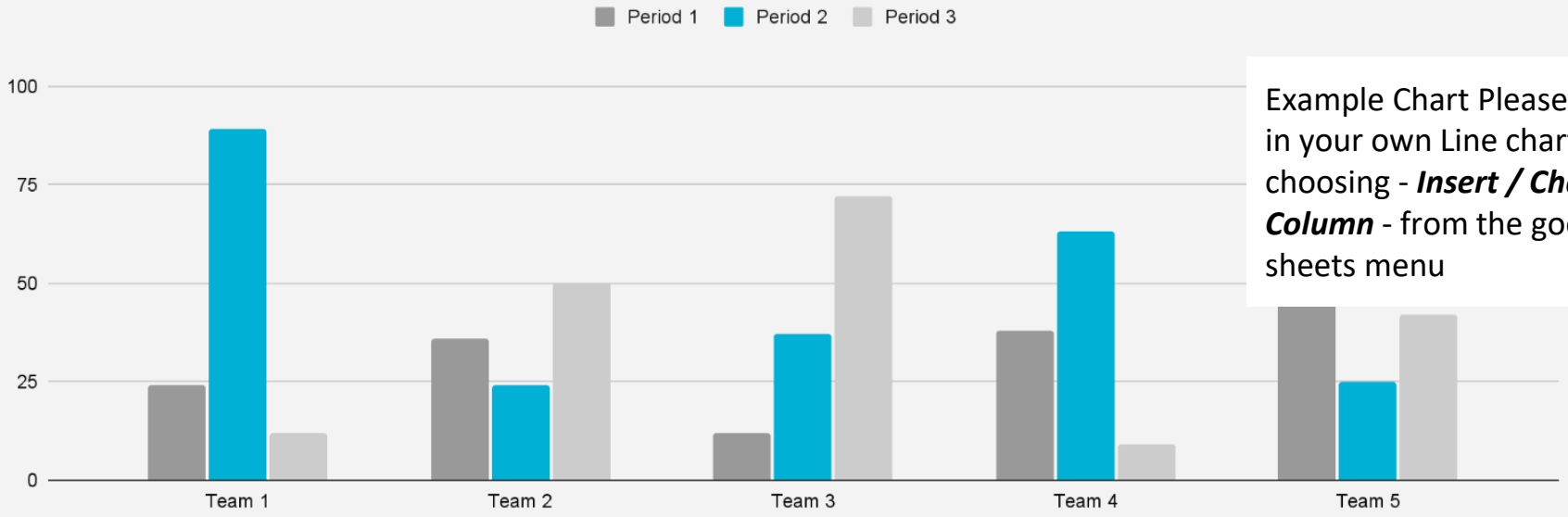

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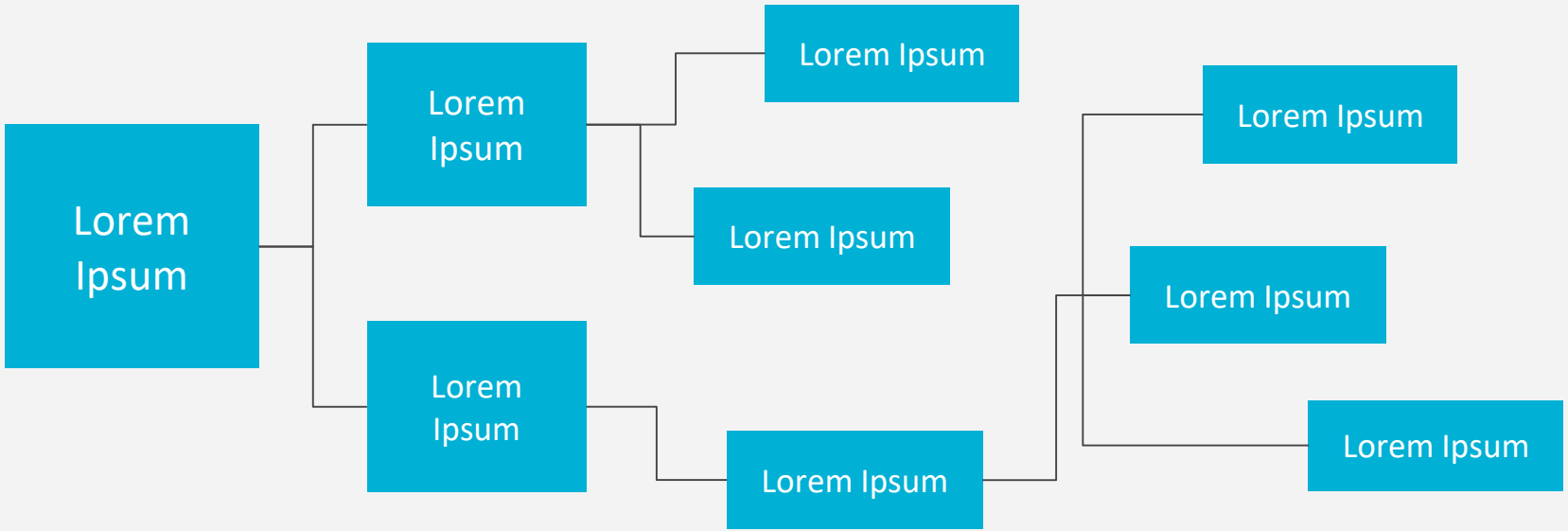

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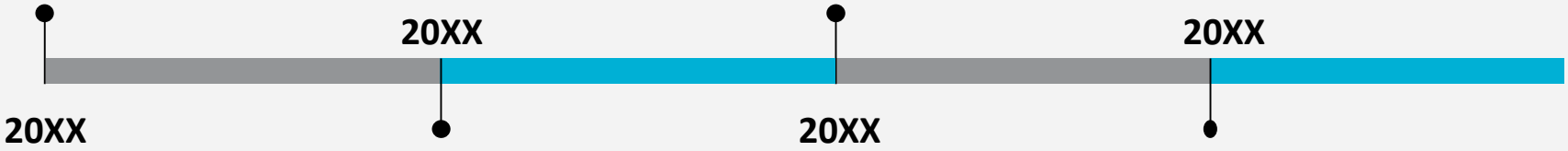

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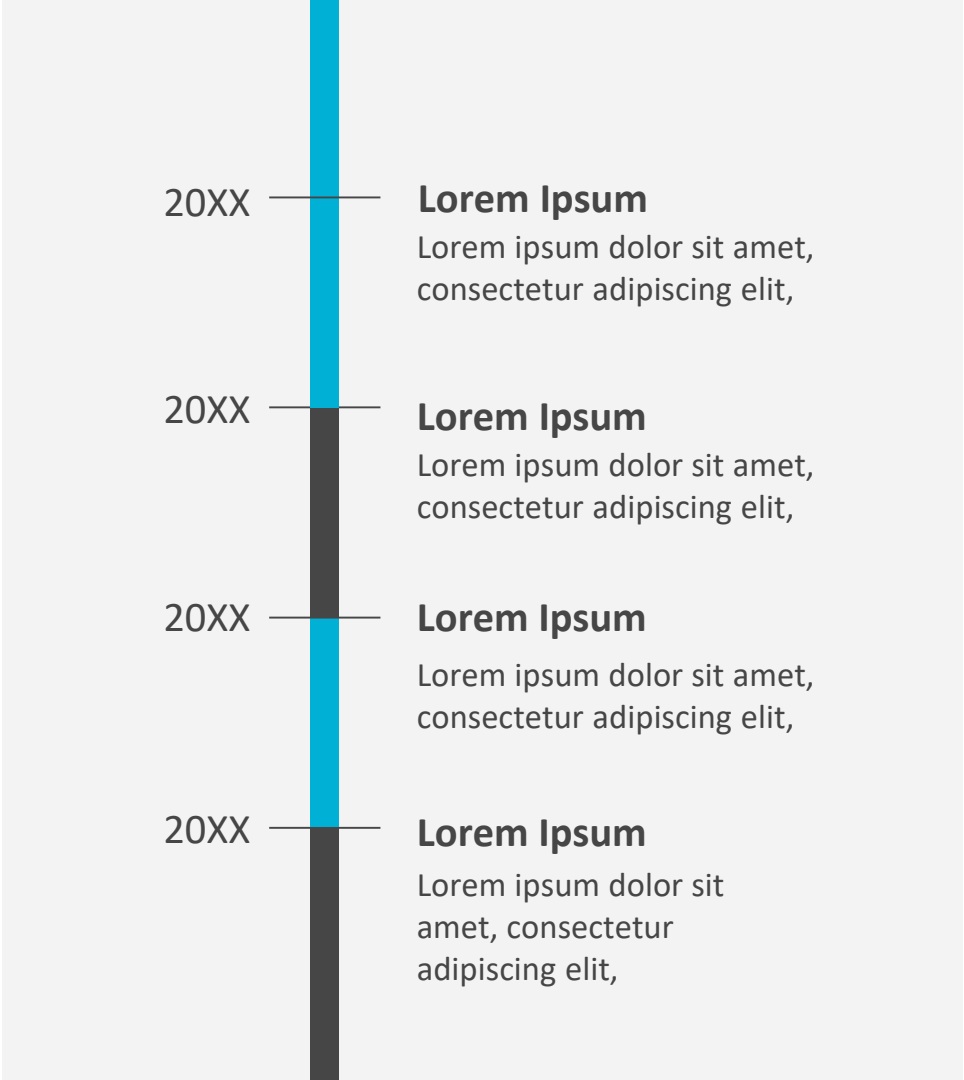

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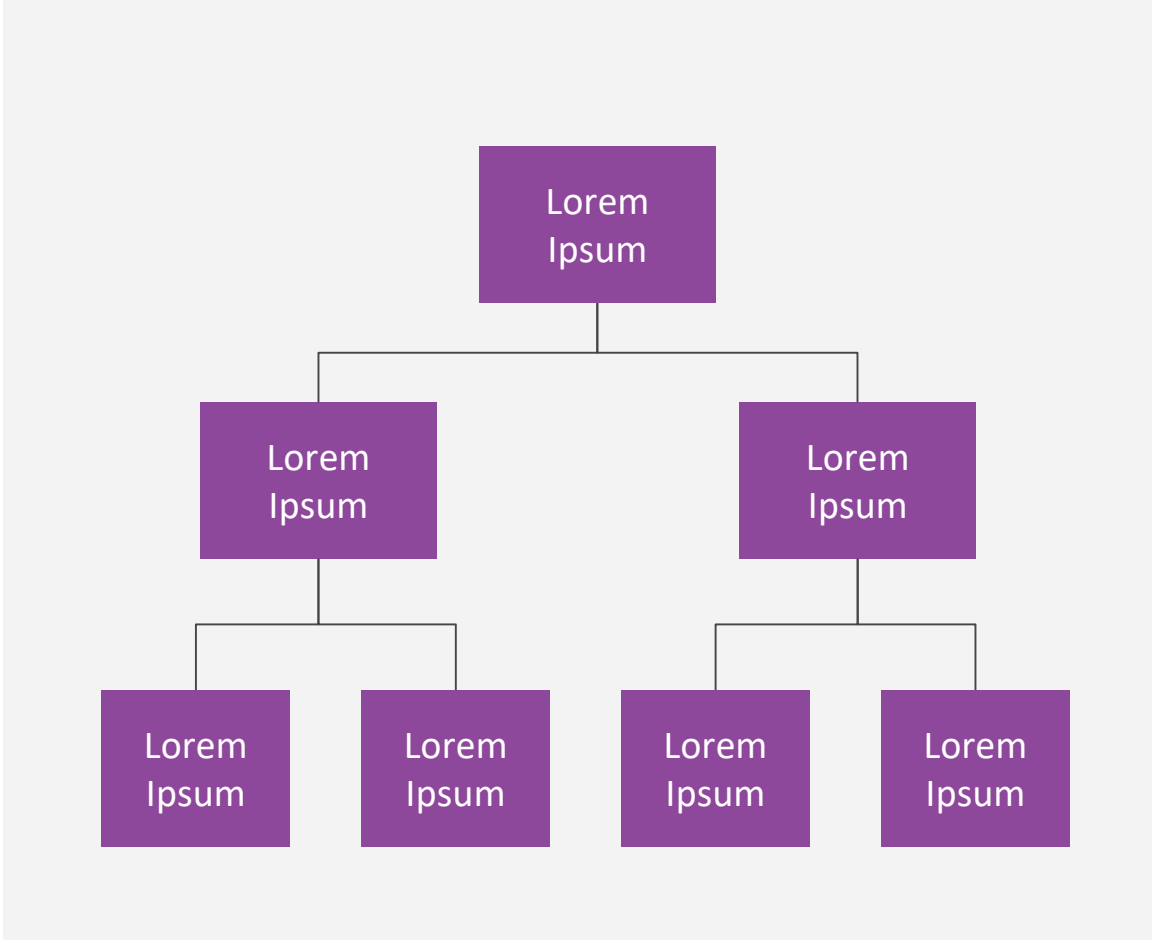

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