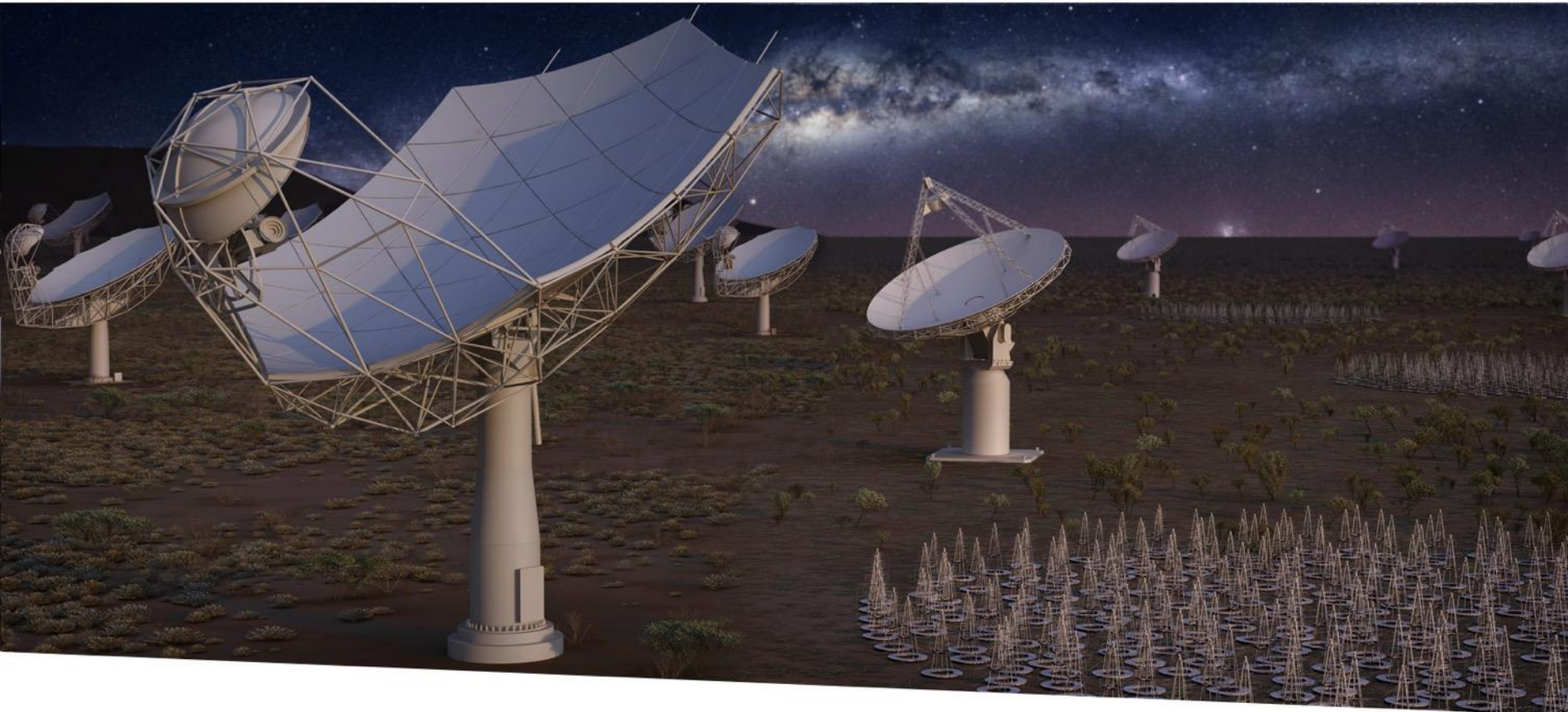


The SKA way of doing SAFe



SQUARE KILOMETRE ARRAY

Exploring the Universe with the world's largest radio telescope

Summary

- Introduction
- Challenges in SKA software development
- What is SAFE and how it is adopted for SKA
- SAFE step by step in SKA bridging
- Towards Construction

SKA: a global Research Infrastructure



Members
Host Countries: Australia, South Africa, United Kingdom



African partner countries

Challenges in SKA software

SKA will likely be a software dominated Observatory

- Highly automated monitors and controls
- Highly automated observation campaigns
- Flexible to adapt to science needs
- High degree of international coordination/cooperation

“What if we found ourselves building something that nobody wanted? In that case, what did it matter if we did it on time and on budget?” Ries, Eric. *The Lean Startup: How Today’s Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*. The Crown Publishing Group.

We need a suitable approach:

SAFe is a globally recognized standard

The SKA direction

Slide presented by Joe McMullin at the Cost Planning meeting in Nov 2018



- Less worried about the distinctions; overall the **project/organisation** is adopting a lean/agile approach
 - Lean
 - Agile

SAFe is a best practice, but we are adapting to the specific needs of the project and tailoring as appropriate to the circumstances (agile by definition!)

So the distinction between a SAFe work package or not should not be a significant difference in how we manage or perform the work

Organisationally working through the details but as software permeates all facets of the observatory delivery, they will align, i.e.,

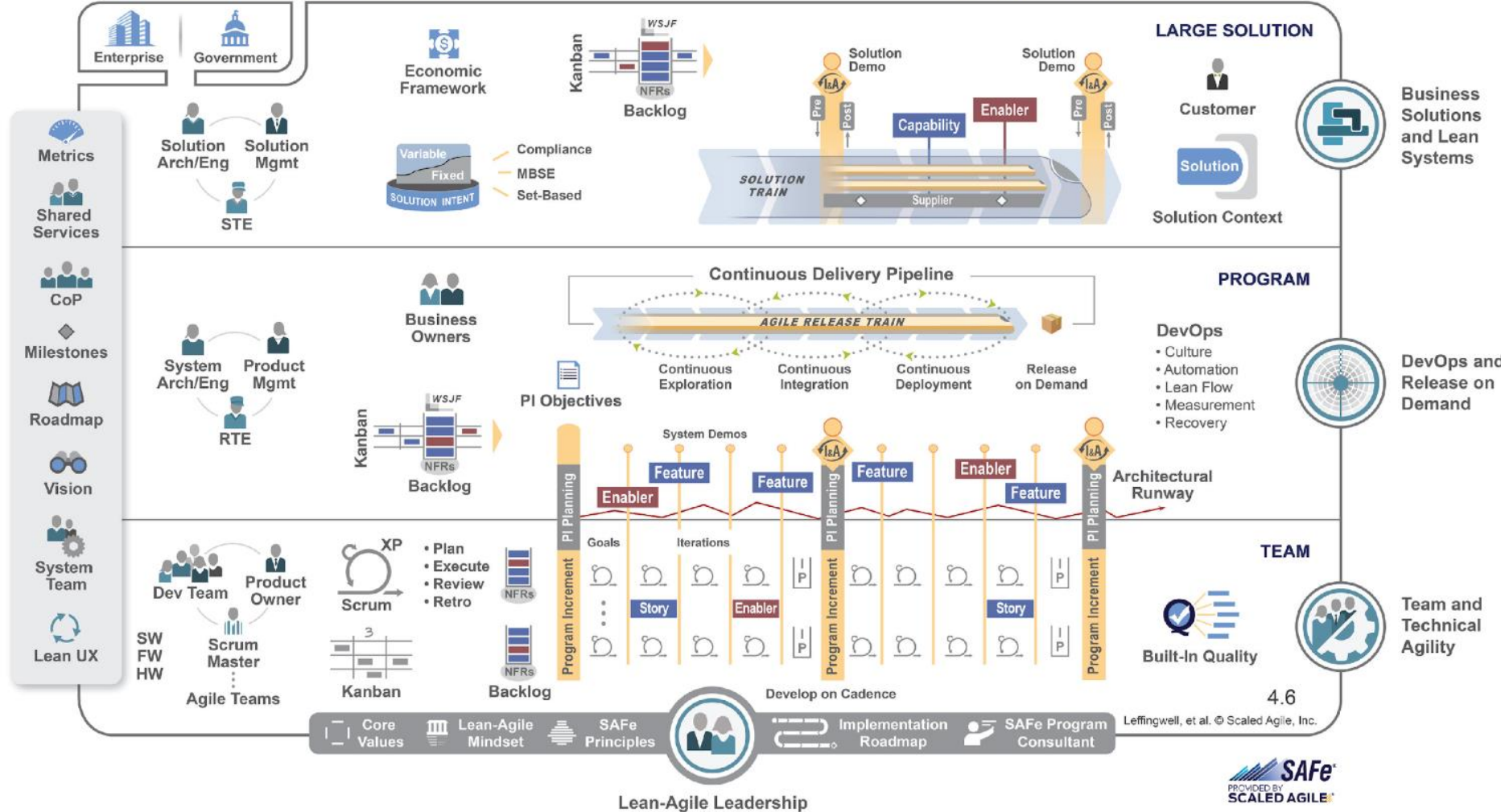
- Agile teams will be delivering to product delivery teams and ultimately to the telescope delivery teams (customer)
- Delivery teams are integrated into the PI process and will be aligned with the planned project cadence of 3 months
- SAFe Solution level integrated into Telescope and Observatory delivery

What is SAFe®?



SAFe® for Lean Enterprises

Large Solution Configuration



What is SAFe®?

How is SAFe® different from classical product development:

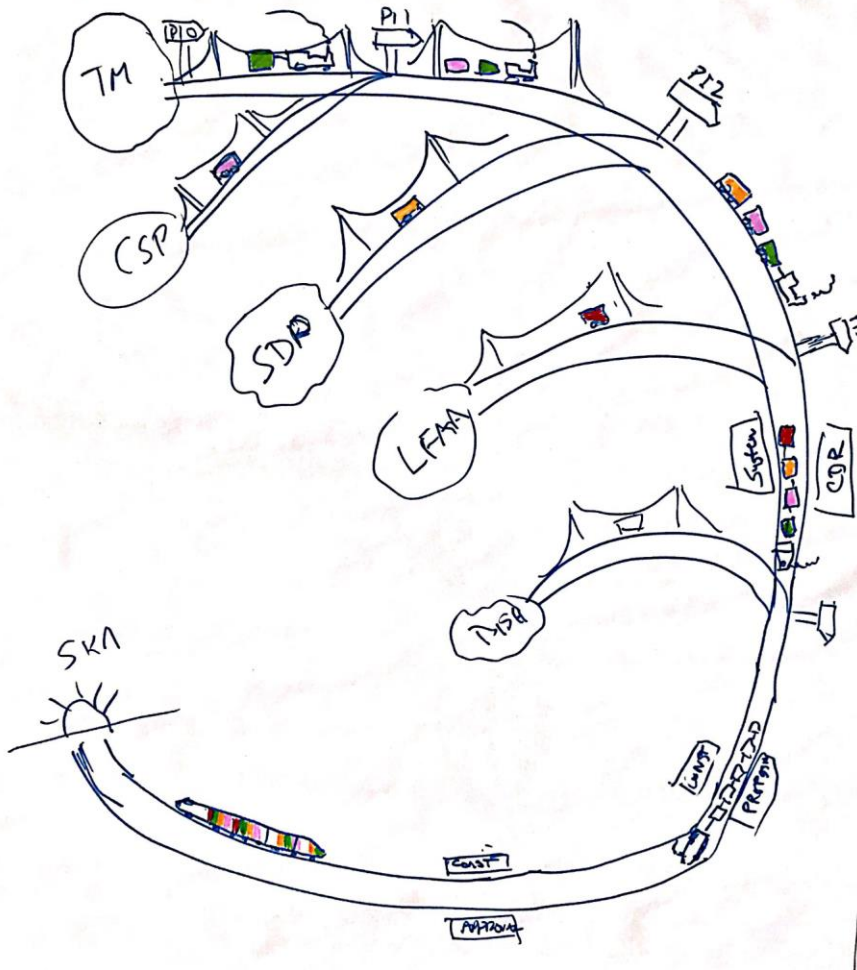
- The product is not completely defined, but adapted to the needs of the stakeholders, that **may be tweaked during the project**
- Active stakeholder engagement is key. This can be seen as a **risk mitigation cost** to help the the stakeholders and the teams implement the final product as it needs to be.
- **Empowerment of the teams** to deviate from the original idea to implement what is right and better.
- What matters is the **efficient use of resources** by continuous improvement to achieve the best possible result. Good enough is not enough!
- SAFe it is not a silver bullet. It is expensive to implement, but statistically delivers better results.

How does SKA differ?

... but SKA is not a normal company...

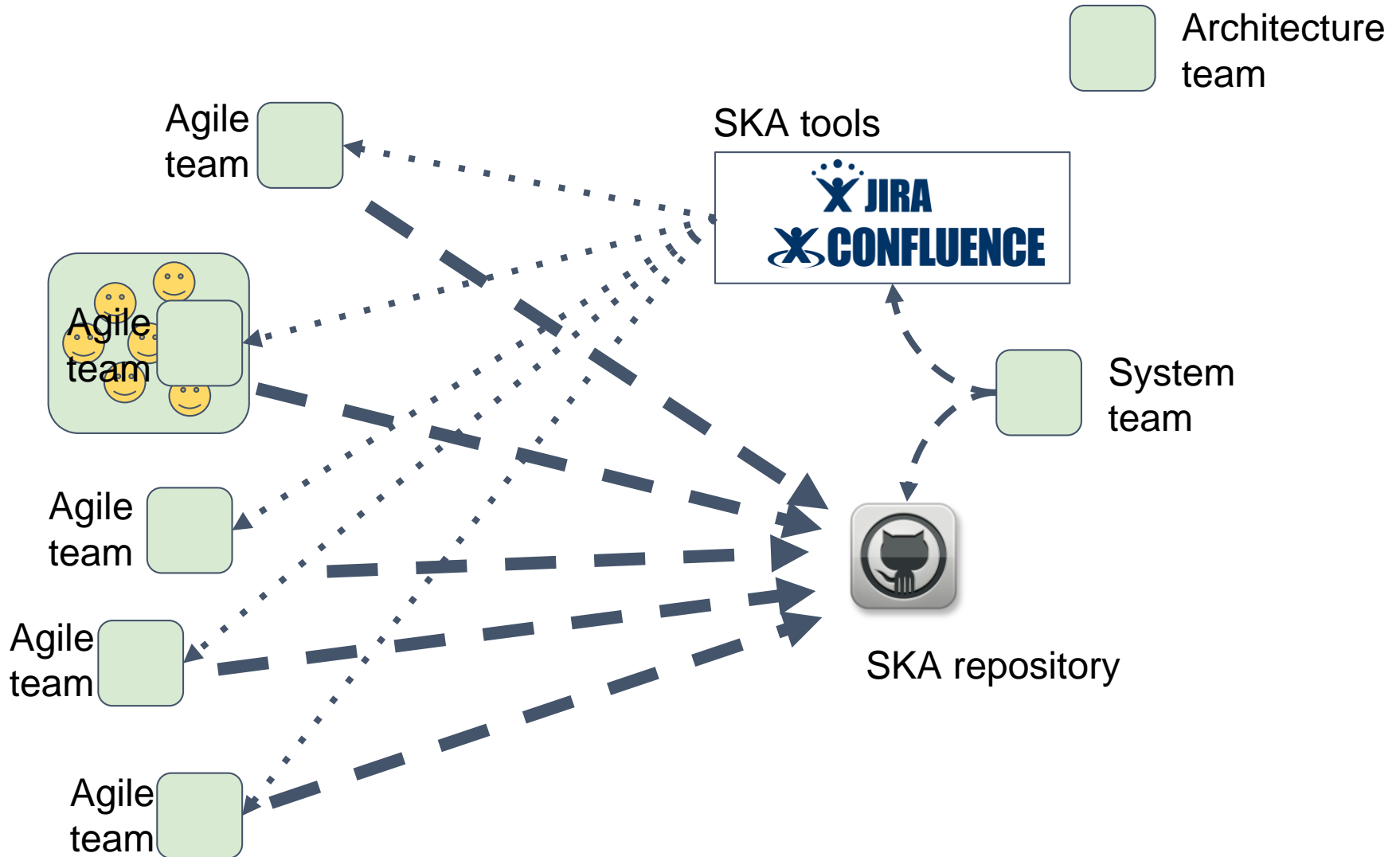
- SKA is not vertically integrated and deals with **distributed resources** across the globe
- SKA is **not “just” software development**, but software is one (fundamental) part of a bigger scope
- SKA software is aimed to provide tools to push the boundaries of science and this requires rare competencies that **cannot be exchanged** between teams
- SKA is formed by many different partners, following different rules, that **use public money** to fund this endeavor.

SAFe® bridging vision

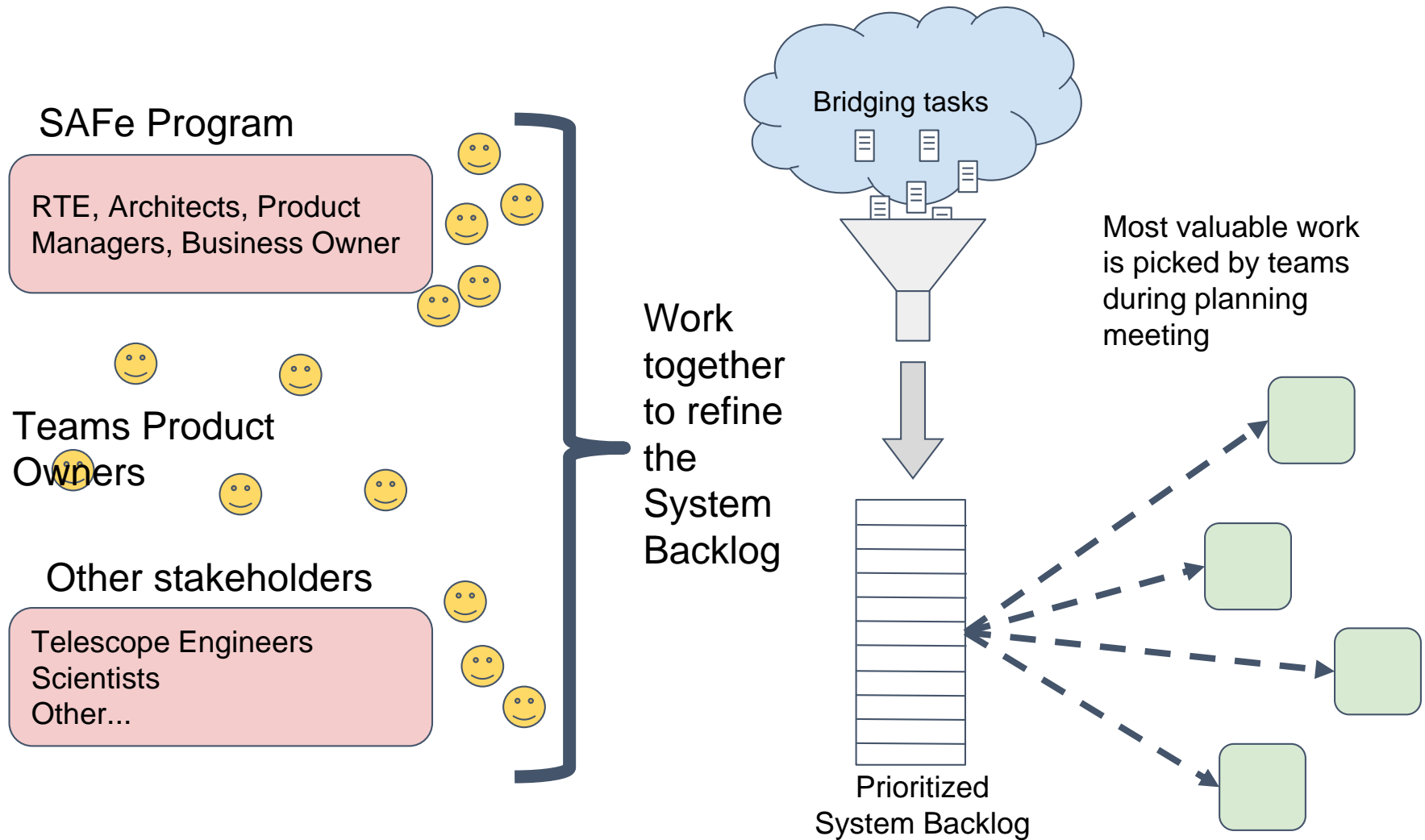


- Transition from consortia “islands” to single development “train”
- Program Increment (PI) Planning meetings are mileposts on the way. Major milestones are “stations”.
- All SAFe work in bridging converges under a single SOW
- See also: <https://docs.google.com/document/d/1QiSQfh0YiwaCc7A16qQjKj7BuXfBLsMzrrz4eMn3YvY/edit>

SAFe® step by step in SKA bridging



SAFe® step by step in SKA bridging



How much work has been done?

- Now:
 - 5 (or 6 or 7) teams formed
 - 192 stories concluded since first start
 - 545 story points of work
 - 390 commits

<Add photos of the last PI Planning meeting>

PI#1 Planning meeting



Towards Construction

SAFe is partially implemented, ramping up to Construction (in chronological order):

- **Cost and progress monitoring** will be extracted from SAFe and matched to the rest of the project (e.g. Earned Value Management)
- The **software development WBS** is being built to allow for the necessary small scope adjustment. Larger changes are still subject to change management process.
- **Telescope Delivery Team** structure will harmonize with SAFe
- **Contract structure** will be finalized to satisfy organizational and funding constraints, starting from the lessons learned from MOUs as a simplified NEC4 contract

Towards Construction

SAFe is a framework that allows for tailoring

- 3 Months cadences of PI
- Onboarding process - on demand
- Adjusting the planning meetings to the time zones (how to do with NZ?)
- Looking into flexible ways to include non-SW activities
- Feature planning meetings engaging all the teams
- Generate two “Solutions” (MID and LOW telescopes) using shared ARTs

SQUARE KILOMETRE ARRAY

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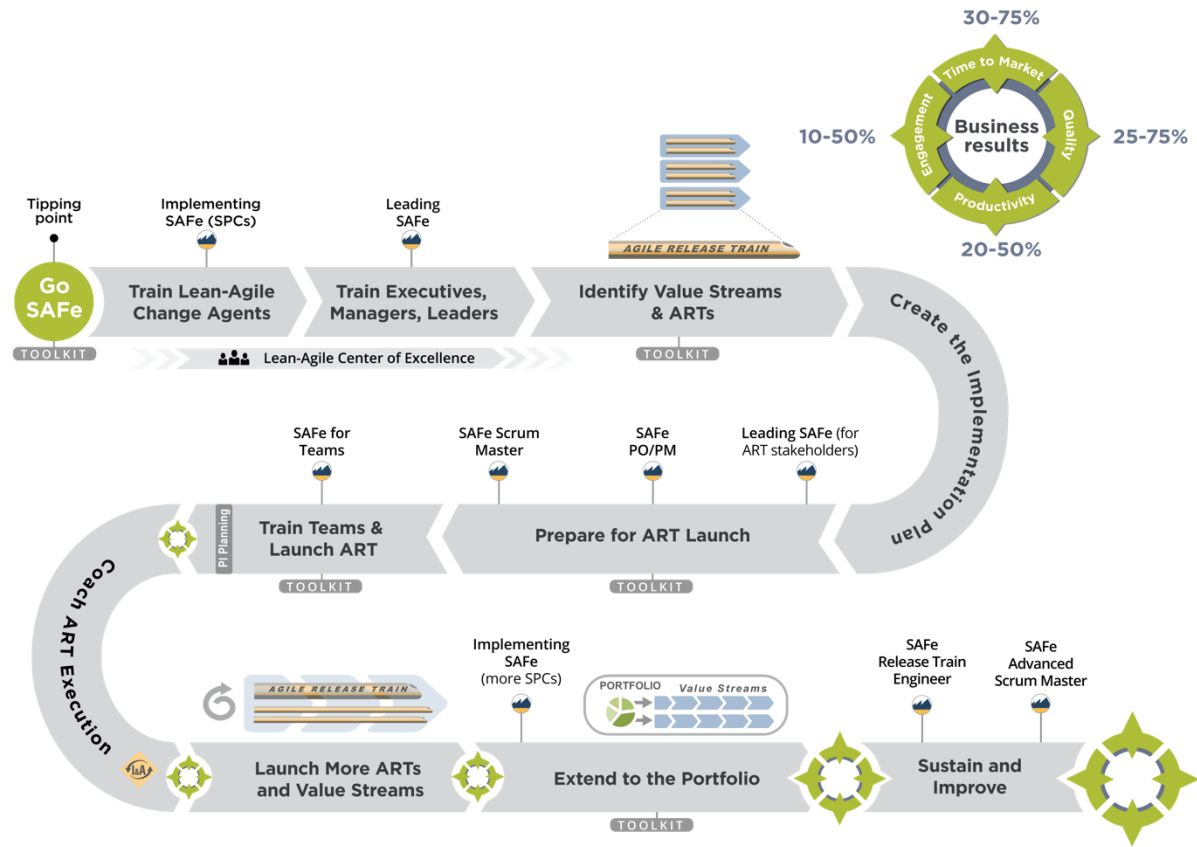


Questions?

Support material



SAFe Implementation Roadmap



© 2008–2017 Scaled Agile, Inc.



The SKA way of doing SAFe®

Many communication channels:

- All-hands Program Increment planning meetings every 3 months
- Weekly "Scrum of Scrums" to identify process bottlenecks and improvements.
- Weekly "PO Sync" meetings to identify content issues.
- Information distributed within teams at daily 15 minute stand-up meetings.
- Teams plan and review on 2 week cycle.
- Confluence and Jira areas are open to everyone.
- Global slack channels for announcements and messages.
- All teams also have a dedicated Slack channel.
- Other ad-hoc meetings when required

The SKA way of doing SAFe®

To account for the assumptions and limitations described we can propose 2 possible onboarding ways:

- Set up an Agile team, in agreement with the SKA guidelines:
 - Define 1 Scrum Master and 1 Product Owner per team
 - The SM and PO participate to the weekly SKA coordination teleconferences
 - Team members can belong only to one team and commit >50% of their time to the team work
 - The team is co-located as much as reasonable and this does not jeopardize the teamwork
 - The team uses the Confluence and Jira tools provided by the Office to coordinate its work
 - The team starts defining its own tasks (stories) and commit to participate to the next PI planning meeting where the plan for work in the next 13 weeks is agreed in accordance with the SAFe practices.
- Join an existing team
 - Start by helping with the ongoing team activities
 - Participate together with the team to the next PI planning meeting where the plan for work in the next 13 weeks is agreed in accordance with the SAFe practices.

More at:

<https://confluence.skatelescope.org/display/SE/Bridging+organisation>

SAFe tools – launch at PI1



Developer Portal

Docs » SKA telescope developer portal [Edit on GitHub](#)

Attention

This portal is under active development and in ALPHA version

SKA telescope developer portal

Welcome to the Square Kilometre Array software documentation portal. Whether you are a developer involved in SKA or you are simply one of our many users, all of our software processes and

Jira progress reports

Sprint Report [Switch report](#)

ST Sprint 1

Closed Sprint, ended by [Barakini, Marco](#) 03/Oct/18 3:02 PM - 17/Oct/18 1:36 PM [Linked page](#)

Being able to access the openstack cluster from the outside. Being able to create a python repository in the ska-telescope github organization.

Status Report

Completed Issues

Key	Summary	Issue Type	Priority	Status
ST-1	Create basic Python project on GitHub	Story	None	Done
ST-13	Add prepar skeleton (PyTest) prepared for python unit testing to repo	Story	None	Done
ST-14	Create scripts for running unit tests	Story	None	Done
ST-24	Access openstack cluster from outside	Story	None	Done

GitHub repository and workflows

SKA telescope

<http://www.skatelescope.org>

Repositories 6 People 21 Teams 4 Projects 0 Settings

Find a repository... Type: All Language: All Customize pinned repositories [New](#)

Top languages

- Python
- PHP
- Dockerfile

GitLab Continuous Integration

ska-telescope > ska-docker > Jobs

All 401 Pending 0 Running 0 Finished 232

Status	Job	Pipeline	Stage	Name
passed	#116955139 fix-makefile ec@abd66	#35575351 by ska	build	build_tango-cpp
failed	#116953273 fix-makefile ec@abd66	#35575351 by ska	build	build_tango-cpp
manual	#116923979 fix-makefile ec@abd66	#35575351 by ska allowed to fail manual	test	test-master
passed	#116923977 fix-makefile ec@abd66	#35575351 by ska allowed to fail manual	test	test-framework

Program Increment meetings

- SAFe revolves around a major cycle cadence of 8-13 weeks.
- We have chosen to run with 13 weeks initially.
- Planning ideally in “all-hands” face to face meetings
- Our Program Increment planning meetings are scheduled on PI boundaries:
 - PI1: Week Commencing the 3rd December 2018
 - PI2: Week Commencing the 25th February 2019
 - PI3: Week Commencing the 3rd June 2019
 - PI4: Week Commencing the 2nd September 2019
 - PI5: Week Commencing the 25th November 2019
- During construction the whole project will work to the same cadence.
 - For more information see:
<https://confluence.skatelescope.org/display/SE/Program+Increments+%28PIs%29+and+cadence>

Work Management

- Overall Program Backlog kept in SP project in SAFe.
 - <https://jira.skatelescope.org/projects/SP>
 - Initial content derived from CDR actions and SOW confluence pages, but diverges after that.
- Product Management (PM's and PO's) analyze, refine and prioritize this backlog into features and enablers.
- Teams pull from this high priority features and enablers at Program Increment planning meetings
- Teams break the features and enablers into stories that they track in their own Jira projects.
- All teams have an area in confluence for their meetings and discussions.

Who is involved?

- Ex-TM consortia
- Ex SaDT consortia
- Just starting with Networks and LMC of SaDT consortia
- In discussions with CSP consortia
 - PSS, PST, LMC, LOW.CBF and MID.CBF are all different.
- Will work with LFAA and SDP consortia after close out.
- There have been some discussions about on-boarding DISH.LMC early.

Who is involved?

- Product management:
 - Robert Laing, myself, team PO's
 - Additional positions in business plan
 - Feature backlog (~SOW tasks) is in Jira:
 - <https://jira.skatelescope.org/projects/SP/summary>
- Architecture
 - Marco Caiazza (PO), supported by architecture team.
 - Including Lorenzo, with additional positions in business plan.
- Release Train Engineer
 - Marco Bartolini (interim), but position vacant.
- Others in software team are product owners and scrum masters of individual teams.

Team resources

- SAFe Architecture Team:
 - Confluence: <https://confluence.skatelescope.org/display/SE/Architecture+Team+-+SARCH>
 - Jira: <https://jira.skatelescope.org/projects/SARCH>
- NCRA Team:
 - Confluence: <https://confluence.skatelescope.org/display/SE/NCRA+Team+-+AT1>
 - Jira: <https://jira.skatelescope.org/projects/AT1>
- OSO-UI Team:
 - Confluence: <https://confluence.skatelescope.org/display/SE/OSO-UI+Team>
 - Jira: <https://jira.skatelescope.org/projects/AT2>
- SAFe System Team:
 - Confluence: <https://confluence.skatelescope.org/display/SE/System+Team+-+ST>
 - Jira: <https://jira.skatelescope.org/projects/ST>

SKA SAFe Bridging Information

- › SKA Office Software Engineering
- › Telescope Model Project
- › Software Construction Planning
- › LMC Harmonisation / Control System G
- › Software Safety
- › Decision log
- › External Vendor Meetings
- Team organization
- › Retrospectives
- › TANGO
- › SAFe
- ▼ **Bridging organisation**
 - › Bridging Meetings
 - Bridging Vision
 - › PO Sync Meetings
 - › Program Increments (PIs) and cadence
 - › Teams
 - › User Interface Development
 - Resources and Capabilities

Pages / Software Engineering

Edit
 Save for later
 Watching
 Share
 ...

Bridging organisation

Created by Bartolini, Marco, last modified on Oct 31, 2018

Software organisation in bridging is implemented in order to achieve the goals defined in the [bridging vision](#) .

Software development during the bridging phase is organized with the goal to implement an Essential SAFe structure as described at <https://www.scaledagileframework.com/essential-safe/> .

The work will be organized in agile teams, coordinating among each other and with the program layer in a series of meetings as described below.

The first Program Increment planning is expected to be on **6-7 December 2018** , preparatory activities are described in the roadmap to PI1:

Date	Event
September 2018	<ul style="list-style-type: none"> NCRA agile team setup System Team setup Architecture Team setup
October 2018	<ul style="list-style-type: none"> Agile dev team 2 setup Opportunities to organise training events
November 2018	Further opportunities to organise training events
3-5 December	Final program backlog refinement Opportunity for teams to have SAFe for Teams training at SKAO Logistics and setup for PI planning
6 December	PI planning day 1

<https://confluence.skatelescope.org/display/SE/Bridging+organisation>