

Digital researchers and data experts

We create digital tools
to explore academic
research in new ways.

KDL PRACTICES: Team, Systems, Data and Models Part 1



Digital researchers and data experts

We create digital tools
to explore academic
research in new ways.

Dr. Arianna Ciula

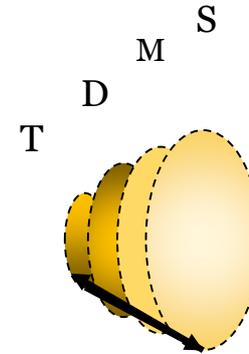
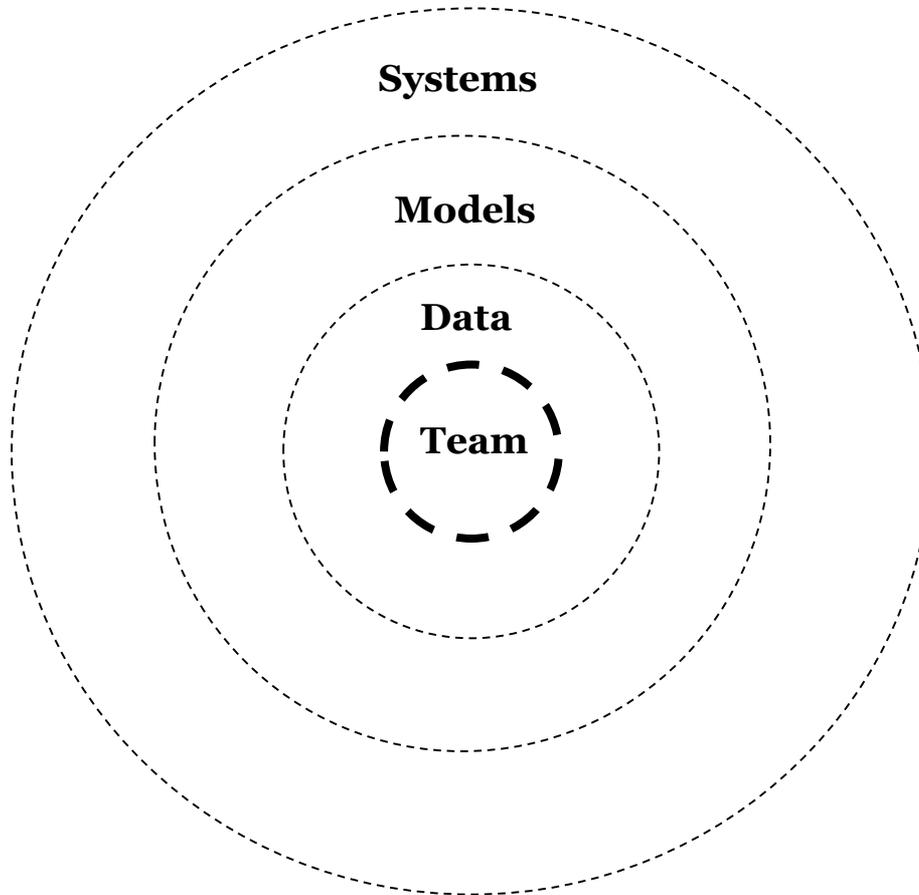
Deputy Director of King's Digital Lab

Senior Research Software Analyst

@ariciula

arianna.ciula@kcl.ac.uk

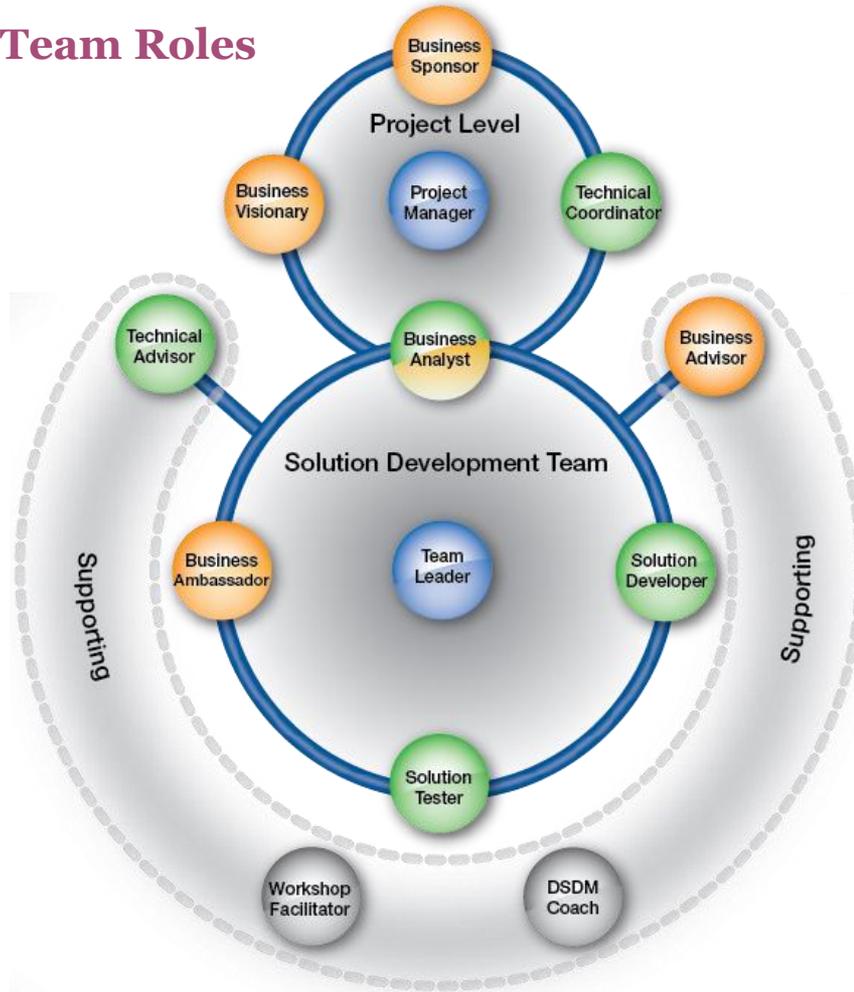




Co-constitution
(bidirectional
influence &
dependencies)

Ciula and Smithies
(forthcoming), Sustainability and
modelling at King's Digital Lab.

Team Roles



Research Software Engineering roles around:

- Research and analysis
- Design (UI/UX)
- Development
- Management
(of projects and of systems)

See the website of the [Research Software Engineers Association](#).

Alignment to **Agile DSDM**

Agile Business Consortium (2014), *The DSDM Agile Project Framework*. Chapter 7: [Roles and Responsibilities](#).

Image ©Agile Business Consortium Limited.

Team Roles

Research Software Engineering

IT Business Support

'Academic' promotions process

'Holistic' promotions process

Professional Services Promotions Process

KDL

Research active:

- Permanent academic.
- Post-doctoral.
- Research Associates.

Research intensive:

- PI / Co-I.
- Analysis.
- Design.
- Engineering.
- Data modelling (etc).

Research support:

- Linux admin.
- Desktop support.
- HPC.

Research support:

- IT business support.
- Web development.

Promotion process aligned to the RSE continuum.

See Smithies (2019), [The Continuum Approach to Career Development](#).

Structure of Team Role Description

Role (e.g. Analyst; Software Engineer; Project Manager; UI/UX Designer) - Senior & Principal

Overview

- Position Purpose
- Key Relationships
- Position Duties

Responsibilities	Key Duties	Time %
...

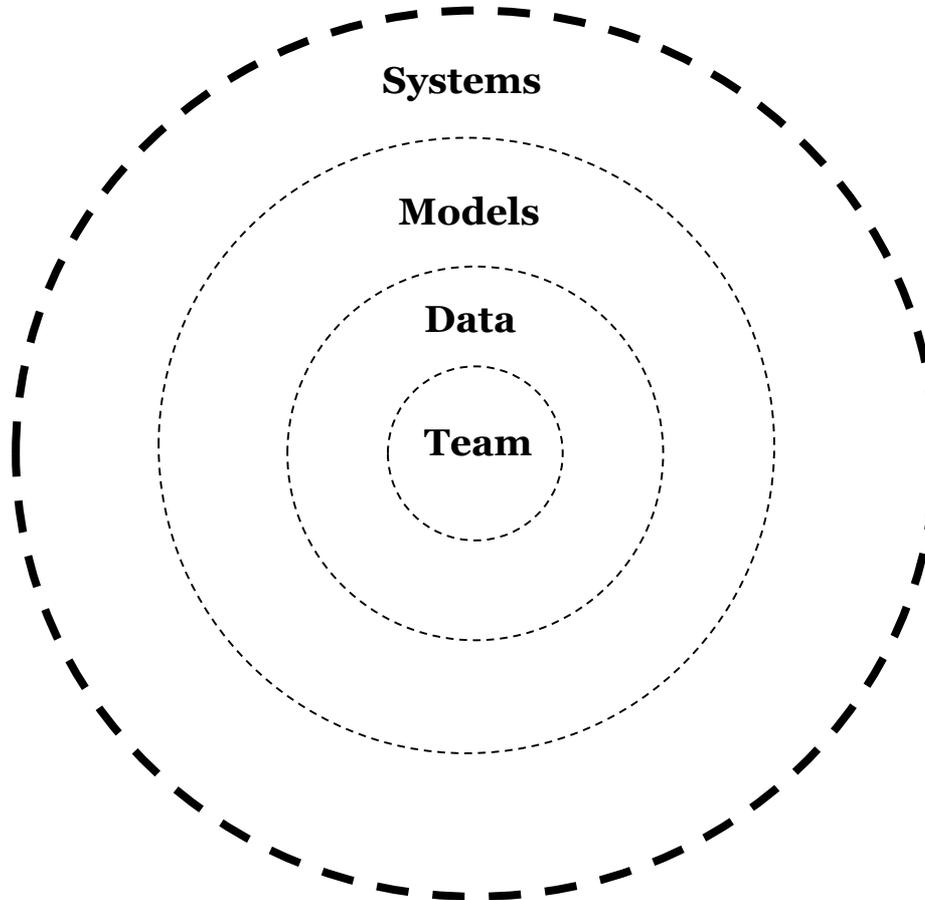
SFIA Alignment (see <https://sfia-online.org> for detailed information about Levels of Responsibility & Professional Skills)

SDLC Roles

Person Specifications (essential and domain specific skills)

Responsibilities	Key Duties	Time %
Research Implementation	<ul style="list-style-type: none"> Produce technical solutions, using tools and methods including but not limited to TEI-XML, high-level programming languages, RDBMS software. 	10%
Research Analysis	<ul style="list-style-type: none"> Deploy existing domain knowledge, or rapidly accumulate more, to understand the computational algorithms, requirements and interfaces involved in a research programming project. Produce solution overview documents, detailing technical requirements, timelines, and cost, suitable for inclusion in funding bids. Work with colleagues across the institution (including both eResearch and IT) to produce ontologies, data models, and documentation to support the production of technical research outputs. 	30%
Project Management	<ul style="list-style-type: none"> Take responsibility for the design and delivery of technical solutions, and their integration into wider institution technical frameworks and strategies. 	20%
Teaching	<ul style="list-style-type: none"> Contribute to training initiatives organized by eResearch teams, including introductory research analysis courses. Provide online and face to face support, and associated documentation, for staff and students using software built or supported by eResearch teams. 	10%
Personal research	<ul style="list-style-type: none"> Develop a personal research agenda, capable of generating external funding, as either PI or Co-I. Contribute to conferences, research papers, and research projects. 	10%
Research Development	<ul style="list-style-type: none"> Work with colleagues across the institution (including both eResearch and IT) to produce technical outputs (code, databases, web applications, databases). 	5%
System, Software, and Data Maintenance & Support	<ul style="list-style-type: none"> Monitor eResearch systems and tools, and patch / upgrade as required to ensure security and performance. Produce technical and end user documentation to aid the use, support, and maintenance of eResearch systems and tools. 	5%
Self-directed learning	<ul style="list-style-type: none"> Maintain and improve skills in research software engineering through independent study and training courses. 	5%
Community outreach	<ul style="list-style-type: none"> Build or maintain relationships across the UK and international eResearch, eInfrastructure, and RSE communities. Attend community events such as seminars and workshops. Contribute expertise to internal and external committees and working groups. Contribute to department and institution meetings and events. 	5%

Example of analyst role



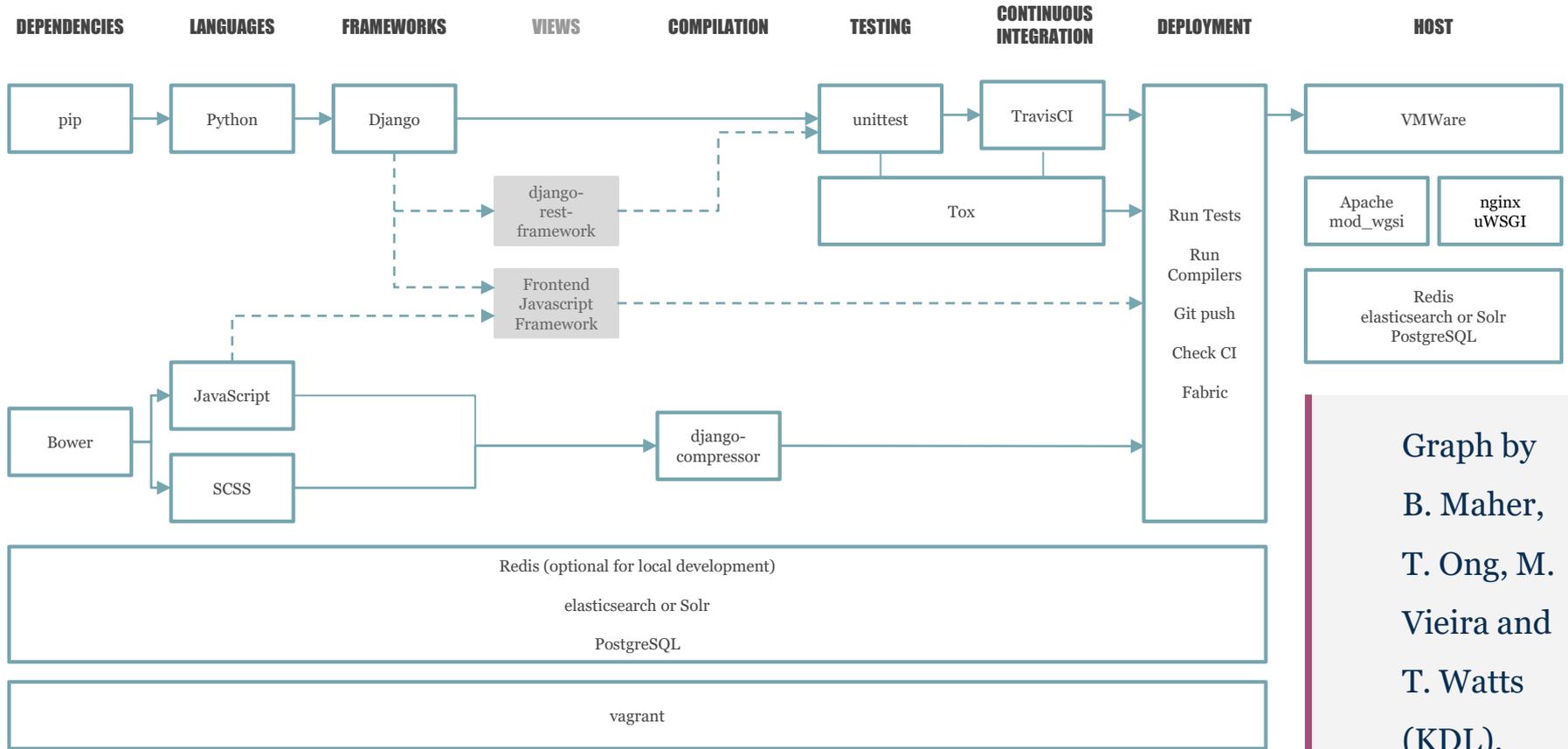
Ciula and Smithies (forthcoming).

Solution Development Architecture

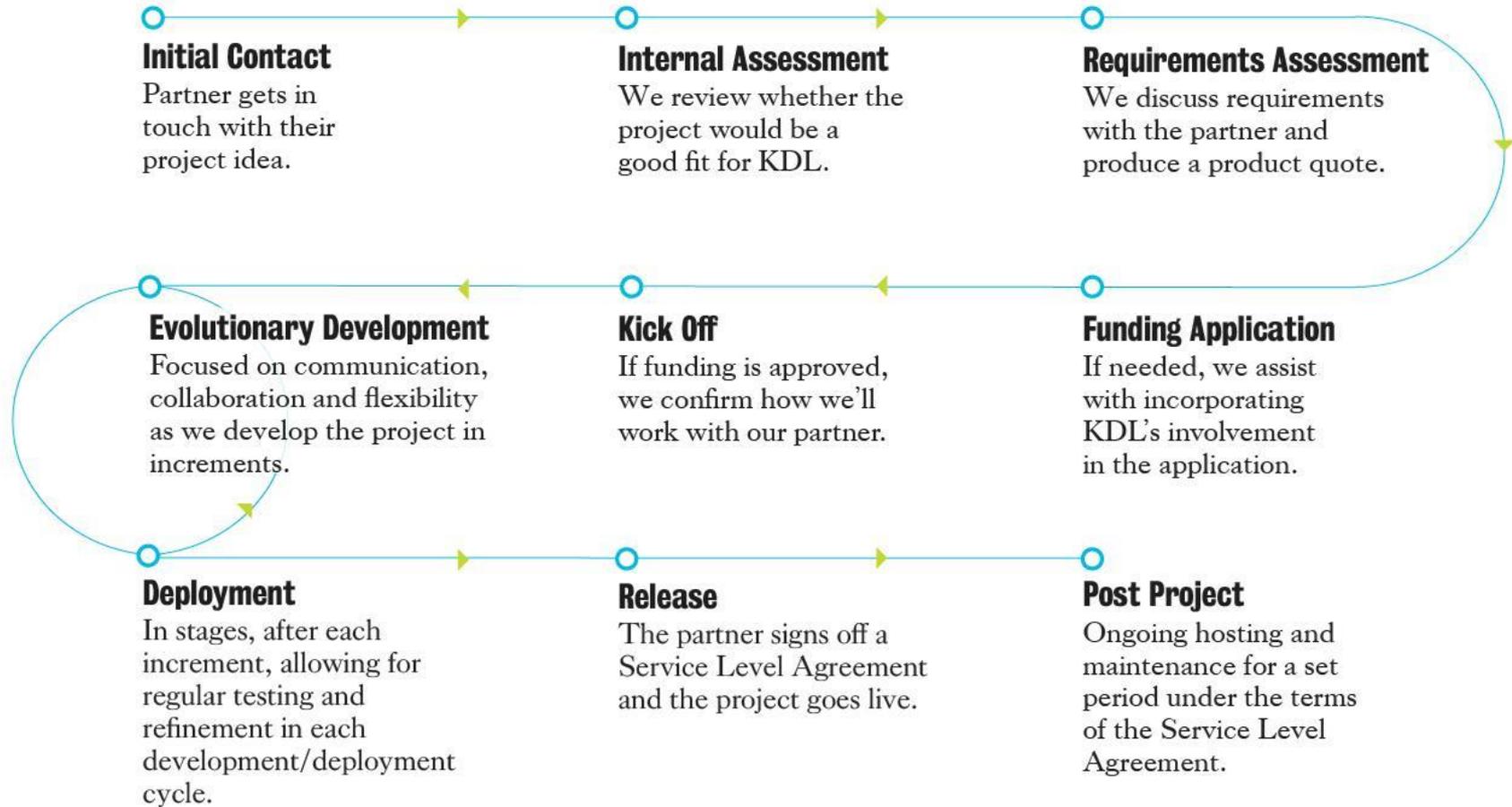
King's Digital Lab Solution Development Architecture



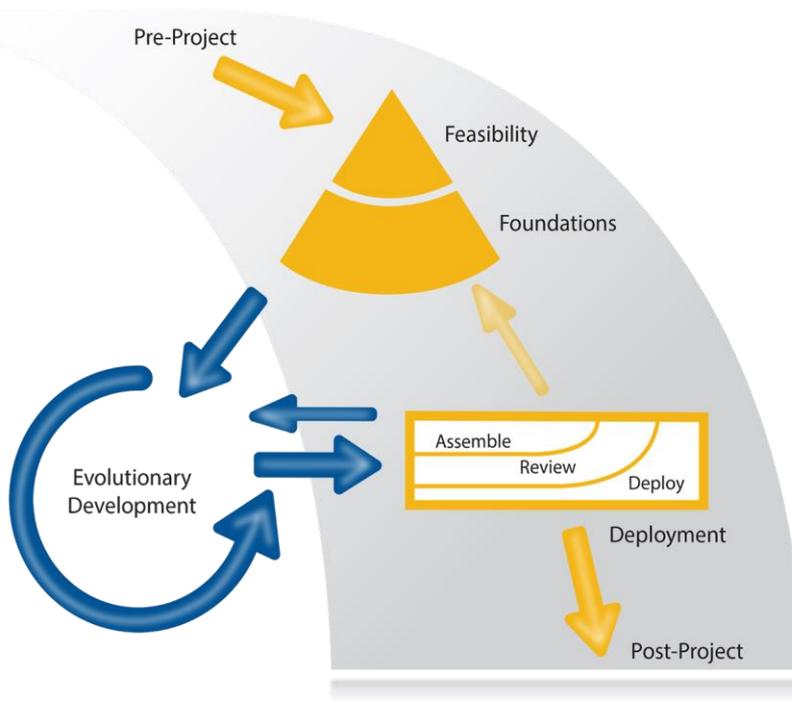
Graph by
B. Maher,
T. Ong,
M. Vieira,
and
T. Watts
(KDL).



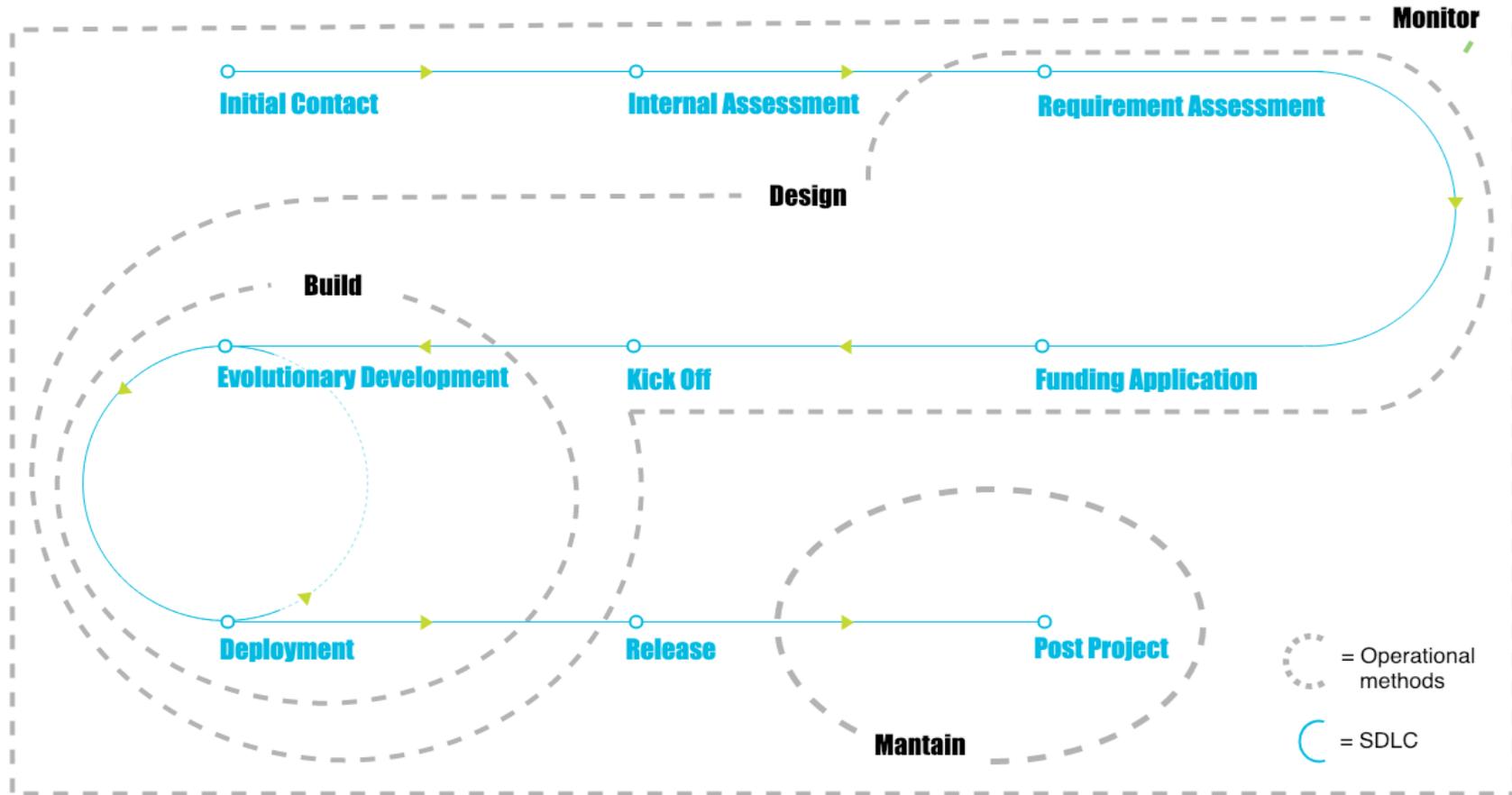
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Alignment to Agile DSDM Process

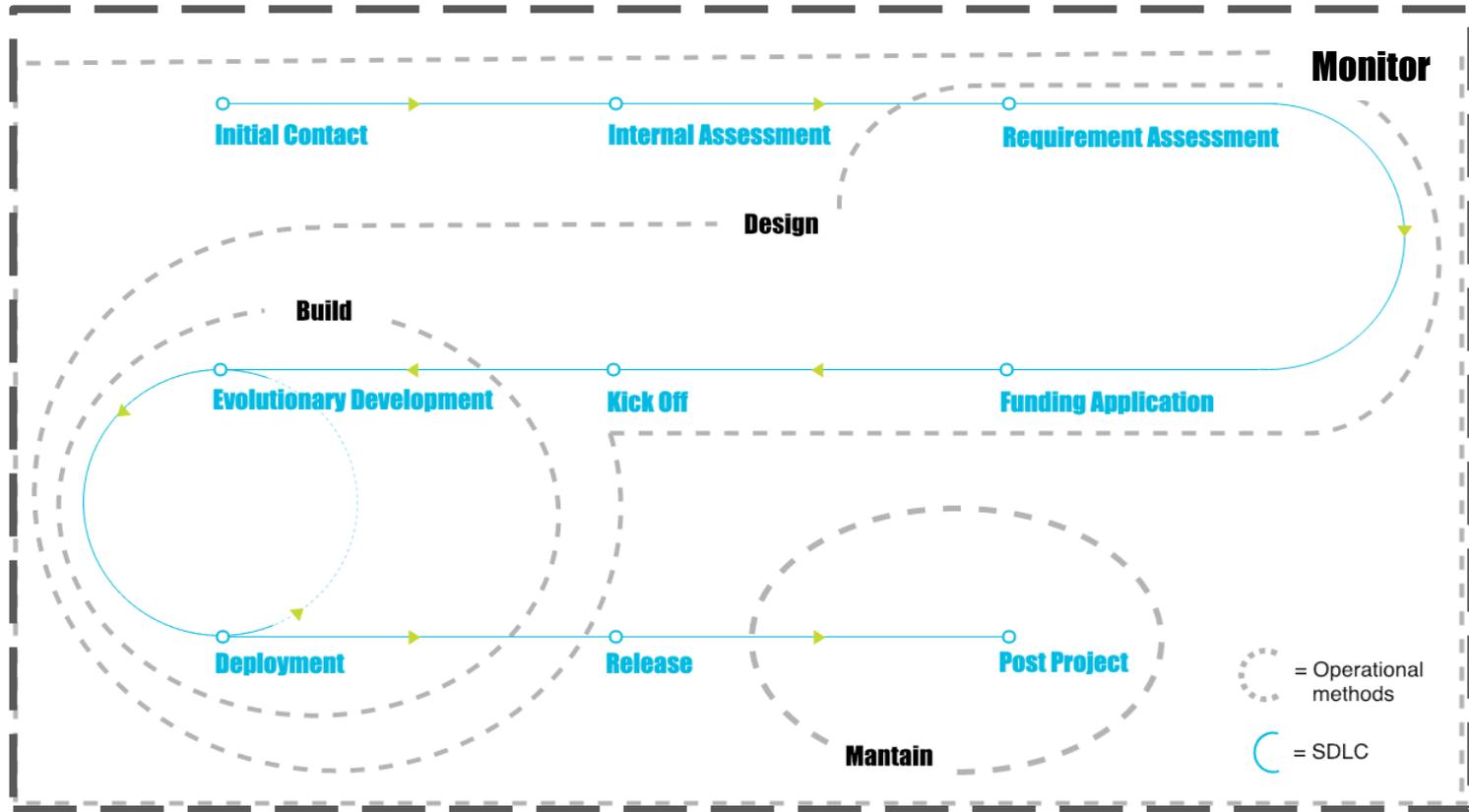


Agile Business Consortium (2014). Chapter 6: [Process](#). Image ©Agile Business Consortium Limited.



Smithies and Ciula (forthcoming).

Monitor Methods



Smithies and Ciula (forthcoming).

Project Management & Communication Tools

Active Collab

Slack

G Suite for Education

Code repositories



ActiveCollab



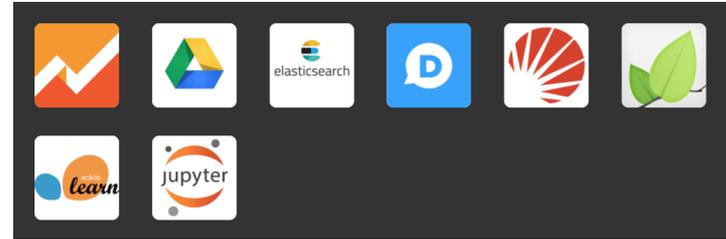
Application and Data



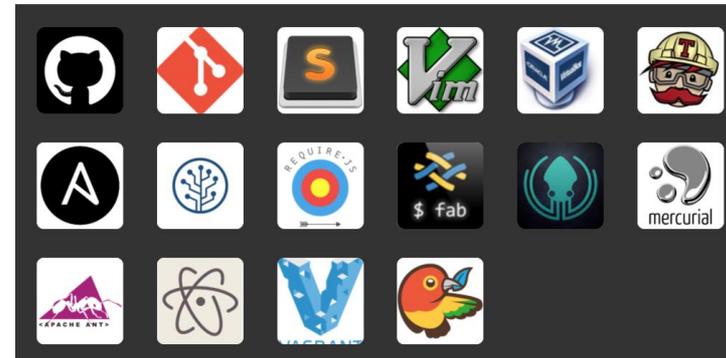
Business Tools



Utilities



DevOps



See [KDL on SlackShare](#).

Project Management & Communication

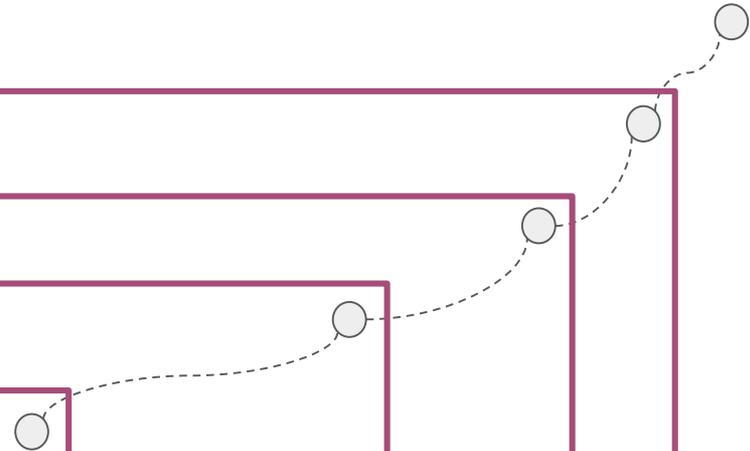
Quarterly Timebox meetings

Monthly Team meetings

Fortnightly Timebox meetings

Weekly Project Planning meetings

Daily Standup (Slack channel)



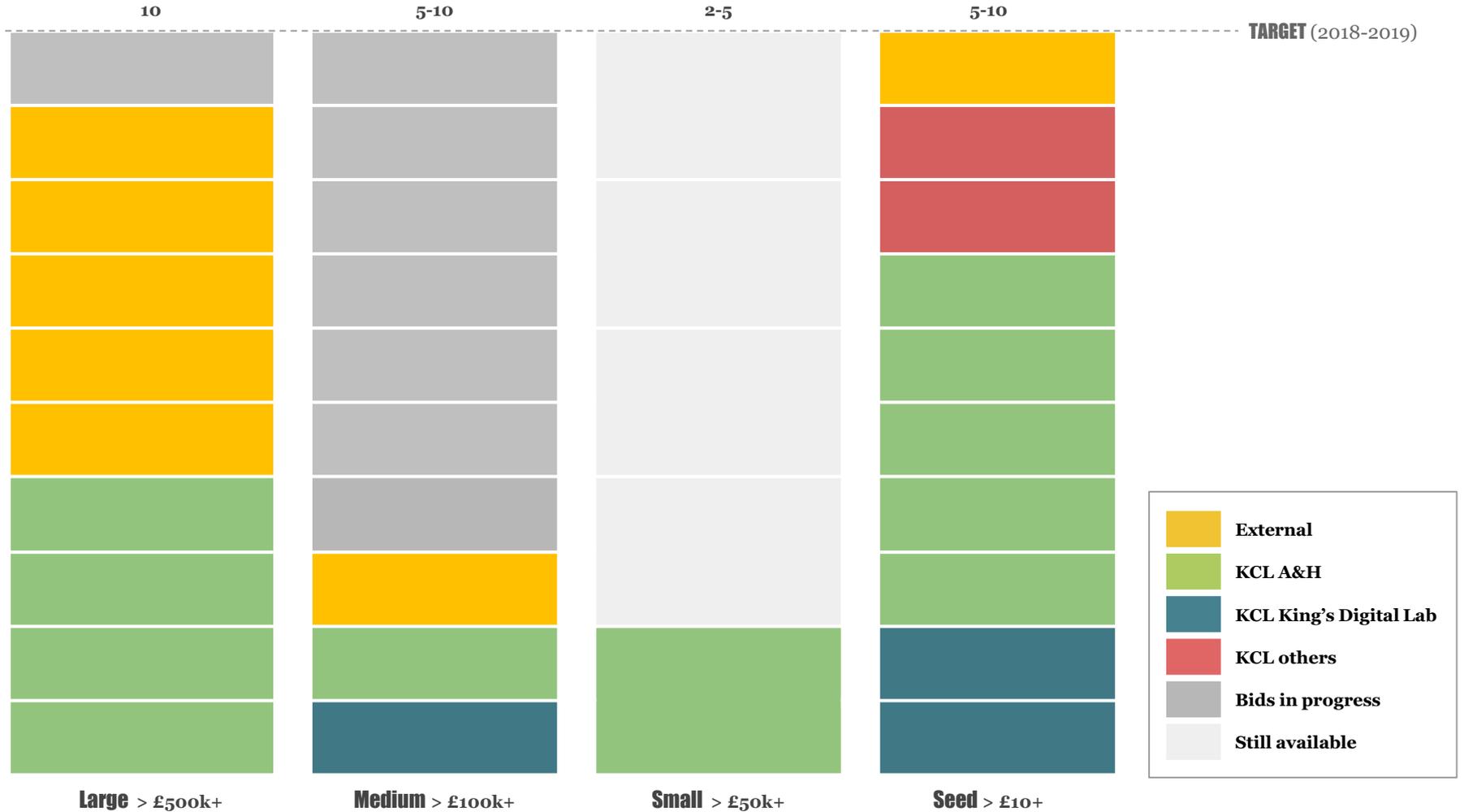
5 year strategy to increase covered costs

- 2017-18 KDL target via research bids: ca £1.5M >> target % cost recovery
- 2018-19 KDL target ca £1.4M

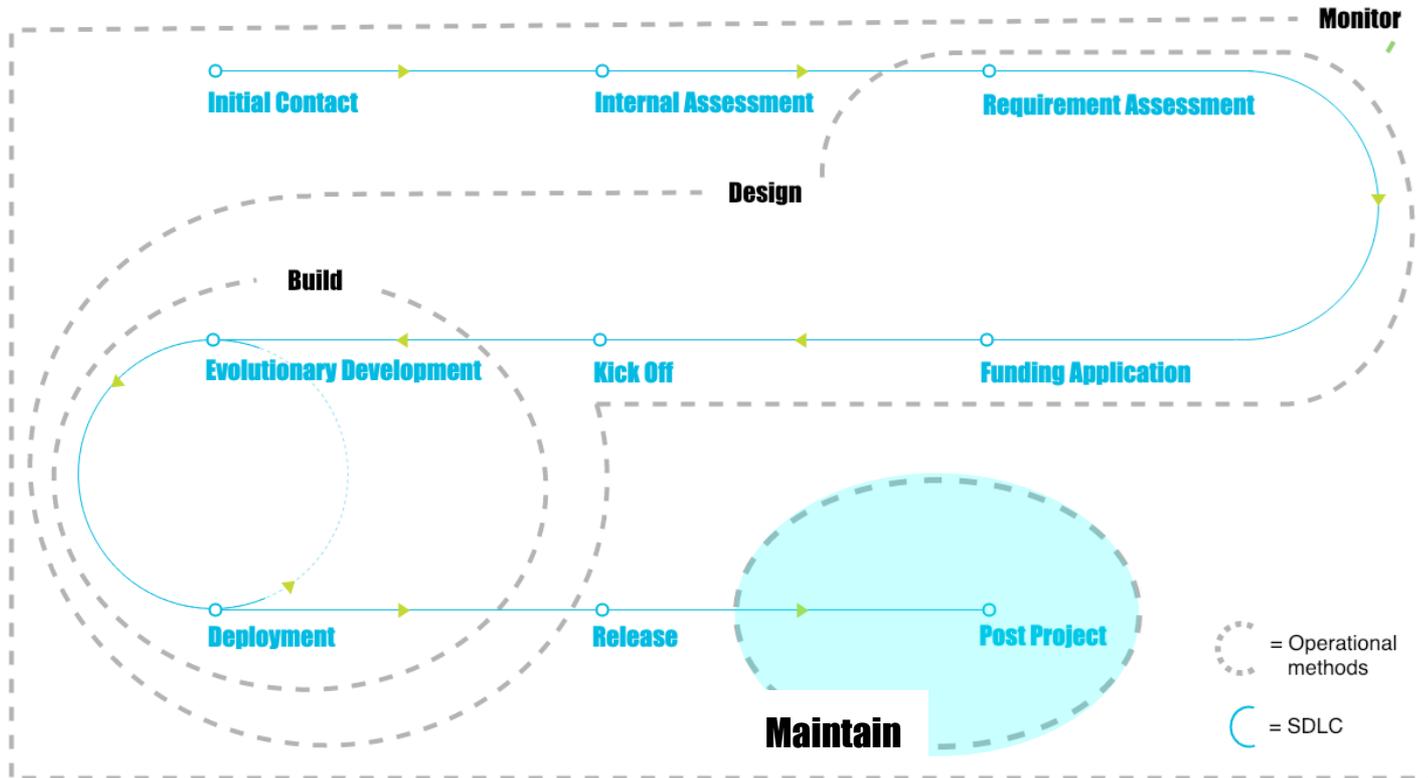
Funding spread 2018-19: ca. £20M

- 10 Large (£500k-1M)
- 5-10 Medium (£100k-£500k)
- 2-5 Small (£50k-£100k)
- 5-10 Seed / exploratory (£5k-£50k)

Diversified portfolio of funding providers



Maintain Methods



Smithies and Ciula (forthcoming).

Archiving & Sustainability Approach

Maintenance under costed SLA
Usually 5-year

Migration

College ITS microsite service or to external host (another HEI or commercial provider)

Static conversion

Maintained public access but reduced functionalities

Dataset deposit

KDL CKAN, institutional technical systems, external repositories

Minimal archiving & storage

Minimal storage (for two years minimum) for project website (VM) and data on KDL infrastructure as well as web archives. A placeholder page is shown at a project URL with description, metadata, and links to snapshots.

See King's Digital Lab (2019), [Archiving and Sustainability](#).



Image by [Designecologist from Pexels](#)

Archiving & Sustainability Approach

Maintenance under costed SLA
See project templates example

Migration
<http://isr.cch.kcl.ac.uk/>

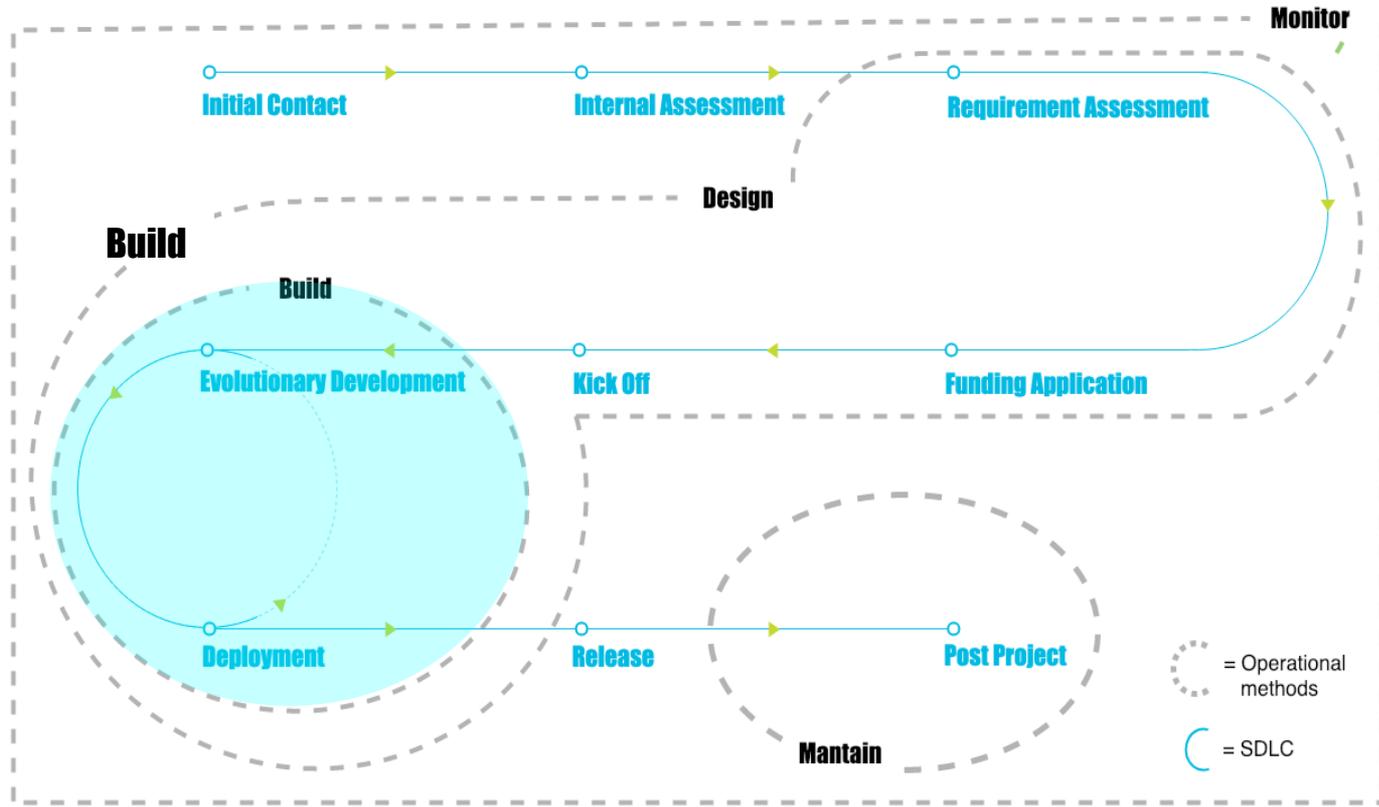
Static conversion
<https://clip2006.cch.kcl.ac.uk/clip2006/>

Dataset deposit
<https://data.kdl.kcl.ac.uk/dataset/frh3>

Minimal archiving & storage
<http://www.ahds.ac.uk/>

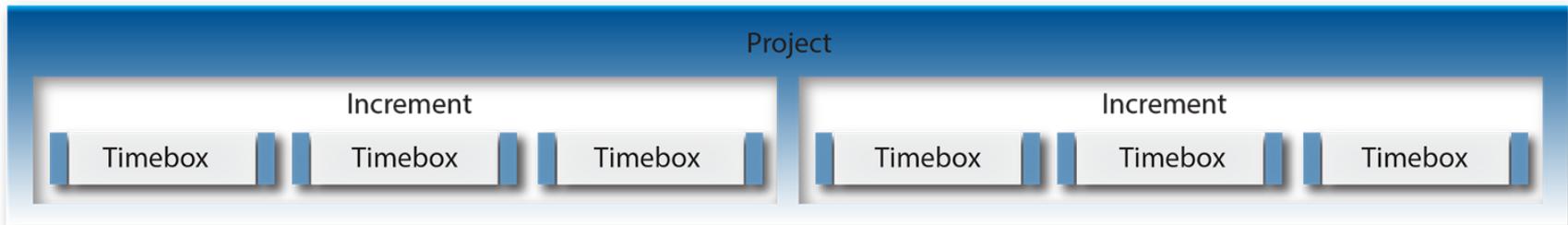
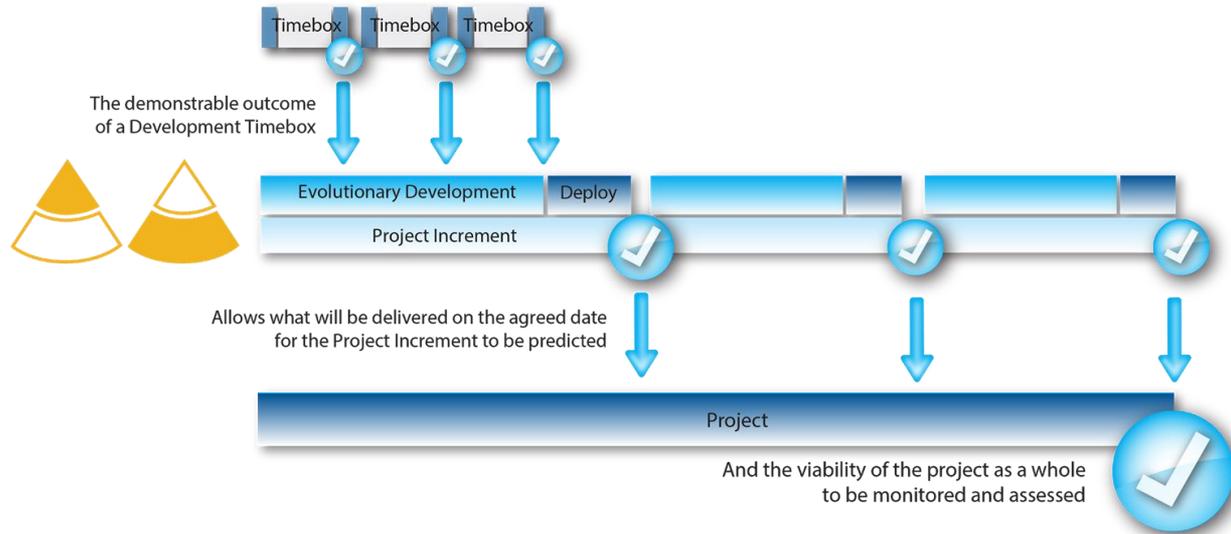
See King's Digital Lab (2019), [Archiving and Sustainability](#).

Build Methods



Smithies and Ciula (forthcoming).

Alignment to Agile DSDM



Agile Business Consortium (2014). Chapter 13: [Timeboxing](#). Image ©Agile Business Consortium Limited.

Intersection between Building and Monitoring: Quarter and Timebox Planning

Team Planning (previously Resource Planning) ☆ 🔄

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1 See the Overview sheet for more information on how to read the information on this sheet.

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6 **Timebox Planning**

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Timebox		Days Left in Timebox
May 27, 2019	June 10, 2019	5.97
Team Size	% Non-project Time	Over Allocated
9	20.00%	NJ EH GN MV GF
# of Work Days per Week	# of Projects Sprinting	Under Allocated
4.00	36	SC BM

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Project		# of Work Days		Role				AC		NJ		PC		SC									
ID	Label	Name	Priority	Budget	Deadline	D	A	P	L	O	A	D	U	P	L	O	P	L	O	P	L	O	P
870	evolutionary dev	African Rock Art Project		97.3%	Dec 31, 2022	749	1.3																
988	post-project	AofM: Art of Making in Antiquity	-	66.6%	Jun 30, 2019	17	10.5																
688	evolutionary dev	Applying AI to storytelling - bringing computational r	M	34.6%	Jul 31, 2019	35	71.6	2.0		2.0		2.0											
663	evolutionary dev	Archetype		102.7%			-1.4		0.0	0.0													
1101	pre-project	Arkyves		0.0%			.0																
1111	pre-project	CCED rebuilt: Clergy of the Church of England Datab		0.0%	Apr 30, 2019	-17	.0	1.3	0.1	1.2	0.5	0.5	0.3	0.5	0.0	0.5							
785	post-project	CEWBJ: The Cambridge Edition of the Works of Ben		65.7%			11.0	0.5	0.3	0.2		0.5											
759	evolutionary dev	Community of the Realm in Scotland, 1249-1424 (C	S	24.5%	Aug 31, 2020	262	237.0	3.5		3.5	0.5	1.0	2.0				0.5		0.5				
871	evolutionary dev	CultureCase Refreshed site integrated with CultureD		95.2%	Jul 31, 2019	35	1.6																
1070	pre-project	Cursive Hieroglyphs (Thebes)		0.0%			.0																

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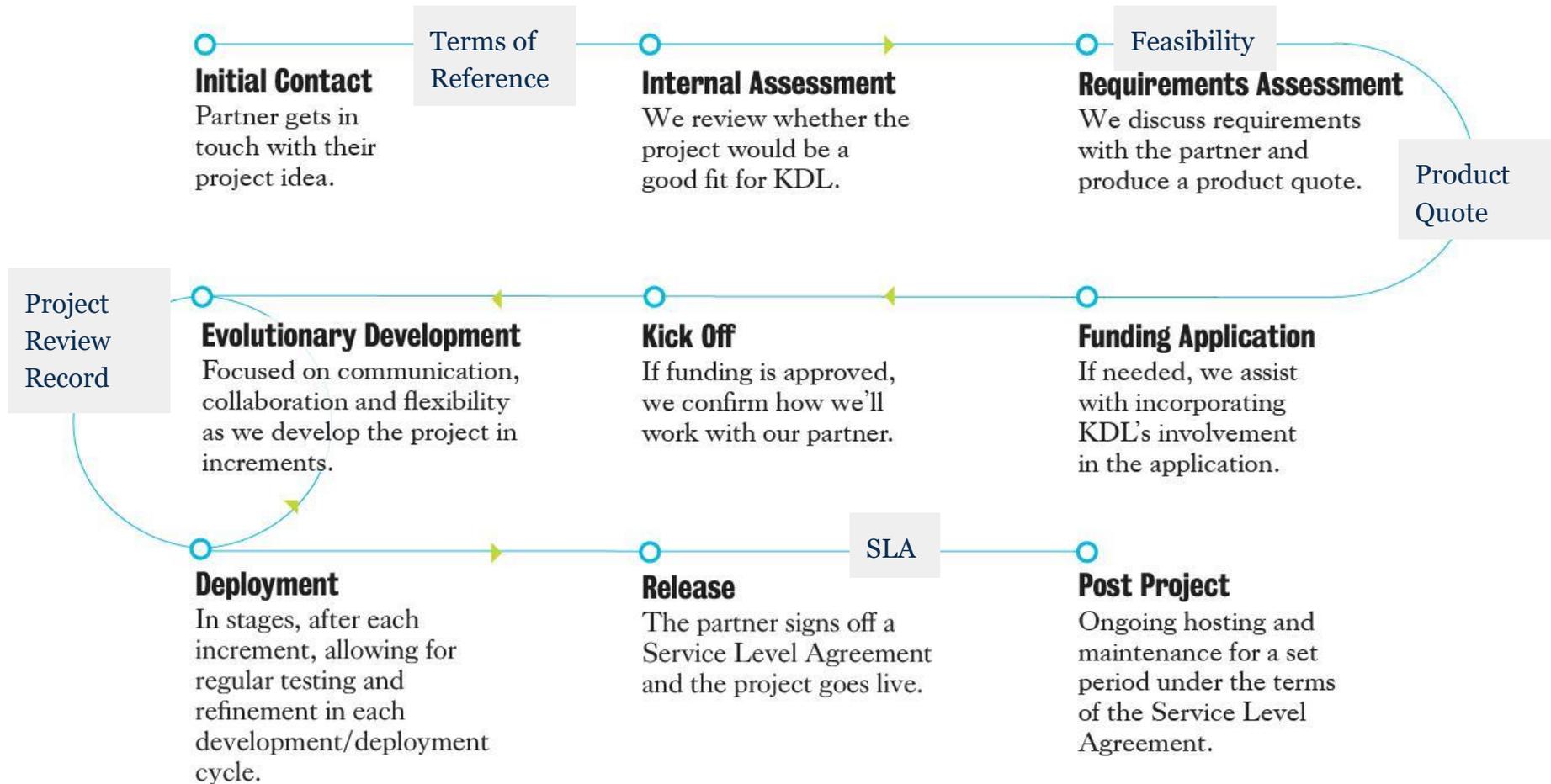
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+ Overview Timebox Projection Quarter Data January - March 2019 October - December 2018 July - September 2018 April - June 2018



INITIAL CONTACT

Please get in touch with us about your project ideas! We encourage potential partners to provide as much information as possible but we're happy to hear about concepts even in their early stages.

Terms of Reference

INTERNAL ASSESSMENT

Based on the information our partners provide, we consider whether the proposed project is a good match for KDL. That means considering things like requirements, time frame and how it might fit with our overall strategy.

Terms of Reference

Feasibility

REQUIREMENTS ASSESSMENT

We'll have an in-depth discussion with you to understand your requirements. That then feeds into further internal assessment to produce a Product Quote, outlining high level requirements, our approach, and project costs.

Feasibility

Product Quote

EVOLUTIONARY DEVELOPMENT

This is when the actual development happens. We divide the project into increments (typically 4-6 weeks), deciding at the end of the previous increment which requirements we'll focus on in the next increment. It's further sub-divided into 2 week timeboxes, keeping the development tightly focused. It includes regular testing during each increment, to catch bugs and other issues early, when they're easier to change.

Evolutionary Development is cyclical with Deployment, as the project moves back and forth between stages.

Project Review Record

Evolving Solution

KICK OFF

If the project is funded, we'll go over the plan for working together at the very start. We use an industry-standard Agile project management approach, which focuses on communication, collaboration and flexibility. This allows us to work with you to adapt to changing requirements.

Product Quote

Project Review Record

FUNDING APPLICATION

The Product Quote will provide the majority of the information you should need to incorporate KDL into your funding application. We're also happy to work with you to write and check technical, cost and other relevant sections before submission.

Of course, we'll skip this step if you already have funding available.

Product Quote

DEPLOYMENT

After each increment, we aim to deploy some portion of the project. This may be a public deployment, or it may be a case of making the functionality available to our partners only in the first instance.

Project Review Record

Evolving Solution

RELEASE

Ahead of release we work closely with our partners to incorporate final changes and carry out final testing. At the release stage we'll normally ask you to sign a Service Level Agreement (costed in the Product Quote), detailing the provision for ongoing hosting and maintenance of your project. When everything is ready we'll agree a final release date with you, including any support needed for launch activities.

Project Review Record

Evolving Solution

SLA

POST PROJECT

All of our projects incorporate consideration of long-term hosting and maintenance needs. The individual project requirements are outlined in the project's Service Level Agreement, and we will contact you toward the end of this period to discuss the future of your project.

SLA

See KDL's [SDLC for RSE](#) and [KDL project templates](#).

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