THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

Technical

Use of Proof of Concepts, Prototypes and Pilots

This document sets out the School's policy on the use of proof of concepts, prototypes and pilot technology solutions. It affects anyone considering using one of these and provides clarity and consistency about how to approach them.

Purpose

Proof of concepts, prototypes and pilots are sometimes used to help define, understand or implement new solutions. They can be hugely useful and a very important approach to help implement the right solution in the right way. The idea of 'fail fast and learn' is important in technology and there are areas where we can increase our use of these concepts to increase pace and quality as well as decreasing risk.

However, if not properly defined and managed, they can bring challenges and generate long-term problems. There is a risk that temporary provision leads to the solution being used for the long term, without ever having been properly selected, implemented or transitioned to live service. We need to use proof of concepts, prototypes and pilots for clearly defined, specific purposes, not to inadvertently bypass good practice and policy.

This policy lays out the School's approach and specific actions to take before, during and after their use. The aim is to provide clarity so that we approach the use of them knowingly and in a consistent way, get the benefits from the use of them that we expect and do not cause risks to ongoing service.

If you need to discuss this policy or how to use it for a new solution, please contact the Director of Strategy and Architecture in DTS, who will be able to help you or refer you to the appropriate person.

Use of Proof of Concepts, Prototypes and Pilots

1. Background

Proof of concepts, prototypes and pilots are an important technique in updating and changing our technology. However, there have been occasions when their use has been poorly defined and managed. Planned short term use has bled into long term live service. This brings several potential problems:

- The solution is a poor fit, in functional or technical terms.
- The solution has not been implemented properly, e.g.:
    - Service transition has not been done.
    - Maintenance and upgrade schedules have not been defined, planned or costed.
    - Long term licencing has not been agreed.
    - The solution has been implemented in a way that is not technically robust.
    - Data was not properly migrated into or out of the solution.
    - Support is not properly defined

Use of solutions in this way has caused operational and strategic problems, sometimes many years later. It has resulted in rework, patching and workarounds, often at short notice.

This policy encourages the use of proof of concepts (PoC), prototypes and pilots. It is recognised that in some situations they are very useful, even essential. This policy aims to make their use clear and straightforward

2. Scope

2.1 In Scope

This policy covers:

- All areas of the School: DTS, BLTs, PSS and academic departments.
- Data and information technology
- Packaged software
- Software as a Service
- Bespoke code
- Databases and operating systems
- Servers and other hardware, whether physical, virtual or cloud deployments
- A/V technology

2.2 Out of Scope

This policy does not apply to:

- Areas of technology that are not data or information related, for example building technology, such as boilers or electrical infrastructure.

- Research purposes, i.e. for conducting academic research. (The management of research is in scope.)
- Temporary solutions as covered by the 'Use of Temporary Solutions' policy. They differ from proof of concepts, prototypes and pilots in that they are used for live, production use and removed from service after a defined period, typically up to a year.

3. Definition

There is no single standard definition of the terms proof of concept, prototype and pilot. However, there is some commonality in how they are used, and it is important to be clear on them. In general, we use these terms as defined below and in the following diagrams:

Proof of Concept: a small exercise to test the real-world potential of an incomplete idea. It does not deliver the idea for live use but demonstrates whether it is feasible. It is used in the early stages of developing a product.

Prototype: an early version of a product. It is the visible or functional manifestation of an idea, which is used to test and learn from at an early stage of the development process. A proof of concept shows if a product, feature or system can be developed, whilst a prototype shows how it will be developed. Prototypes should be used when there is a hypothesis about a solution, but there is uncertainty about how it looks, feels and works.

Pilot: generally, the first stage of an implementation. A pilot is a live activity, i.e., it uses and / or modifies live data and uses the long term solution, often after a procurement. It is limited in scope in some way, generally user numbers or range, or through a reduced set of functionality. Pilots are used when most of the work on implementing a solution has been done, including testing. A pilot solution needs to go through full testing before use. A pilot is not a substitute for good testing. However, they can be useful to iron out any minor creases, or understand how the solution works in reality, before expanding use. As pilots are used near at the end of the project lifecycle, they usually only offer room to make minor changes to the solution.

It is important that all three of these approaches have a proper way to gather feedback and data about the use of the solution. There needs to be a structured way to assess whether their use has achieved what was expected.

Proof of Concept vs Prototype vs Pilot

There can be considerable variation in how these terms are used.

Proof of Concept

Not live
Will be turned off
Tests high level ideas or hypotheses
Requirements not known in detail
Has very limited functionality
Some parts may be 'smoke & mirrors'
May well be dummy data
Tends to be used to assess if an idea or concept will work
Very limited effort and use, from a couple of hours up to a week or two
Used by a few expert users or key stakeholders.

Artist's impression

Prototype

Early version of a solution
Will have some functionality, but some areas will be missing.
Will be turned off. Data won't be migrated back to live
May be thrown away or taken away for significant work to develop into a full solution
Won't be used in 'live', but may use a copy of live data
Produced to get feed back, test implementation of ideas and technical Feasibility
Limited duration: likely to be a few weeks at most

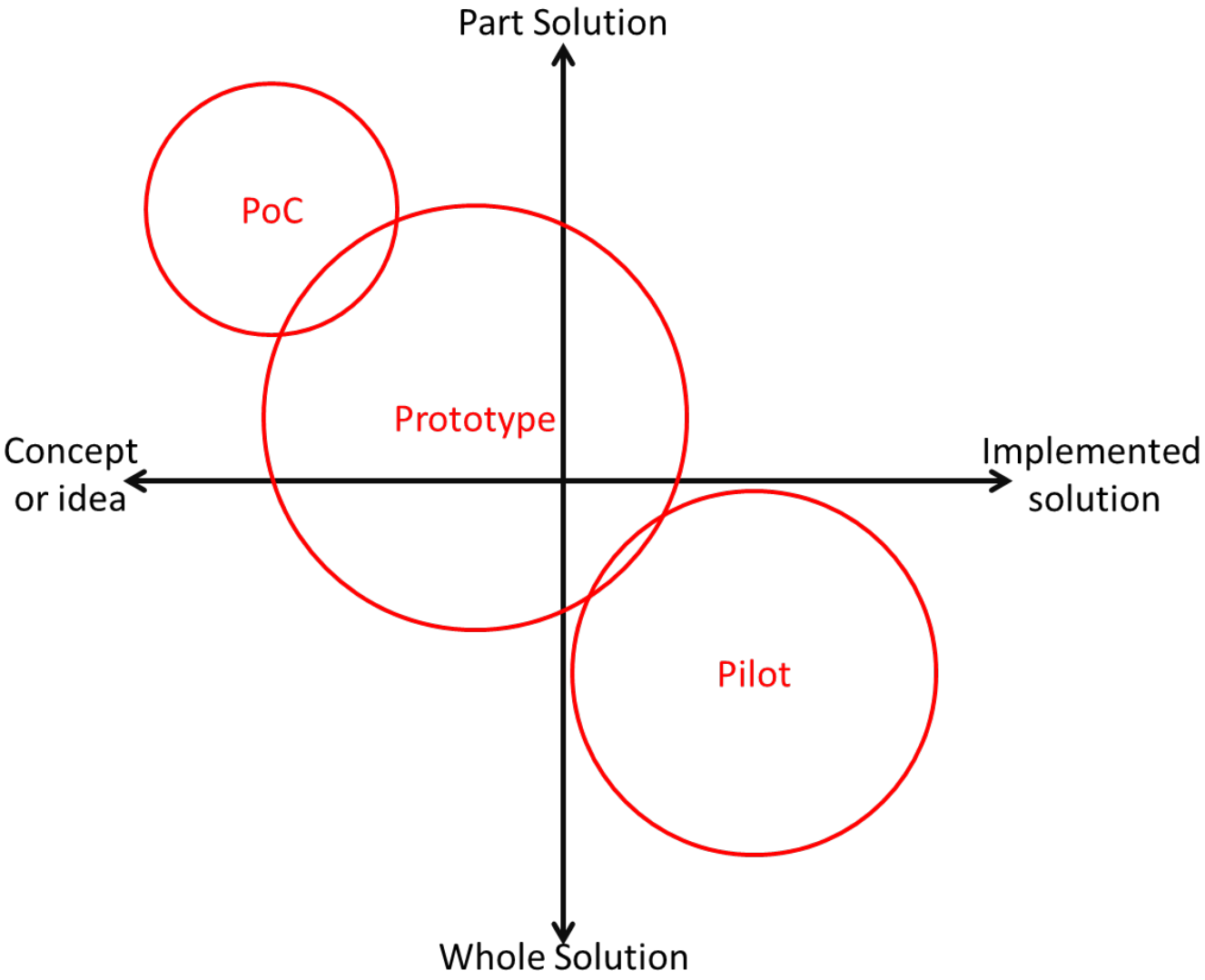
Physical car, one-off

Pilot

Initial roll-out of the solution.
Limited scope: eg of user numbers, Locations, interfaces etc.
Will not be thrown away.
Live data is updated.
Used to prove specific aspects, eg scalability, usability etc.
Requirements well defined
Will have most of final functionality
Limited range of changes that can be made before final roll-out
Tests detailed issues.
May last weeks or months.
Used by 'real' users, although it may not be the full range

Early version of final product

Comparison of PoC, Prototype and Pilot



4. Use of Proof of Concepts, Prototypes and Pilots

As noted above, this policy encourages the use of proof of concepts (PoC), prototypes and pilots. However, it is important that when we use them we:

- Are very clear about what concept we are trying to prove, or what we are prototyping.
- Recognise that, in the case of a proof of concept or prototype, it is a temporary approach.
- Are clear what will happen at the end of the period? What is the exit approach? For example: will the solution be turned-off? How will lessons be learnt from the work done? What will happen to hardware and software that's been used? What will happen to the data involved; will it be destroyed or migrated?
- Have a structured way to review and learn lessons before proceeding.
- Have defined how we will stop it sprawling out into wider use, making it very hard to remove. This has been a problem previously.

- Are clear when the solution will be removed.
- Know how its removal will be funded and resourced.

It is important that the relevant work is properly defined as either a proof of concept, prototype, pilot, temporary solution or a full solution. This matters, because it determines how we assess, manage, govern and implement the work.

There are several key questions to confirm:

- What happens at the end of the trial phase? Specifically, will the solution remain in service or be turned-off?
- Will any data be used during the pilot, whether as a copy or live data that will be modified?
- What is the specific purpose of the proof of concepts, prototypes or pilot? For example, for a proof of concept, what is the concept that is being tested?
- How will it be measured? There are many ways of doing this, but some thinking must be given to this at the outset.
- How will we capture lessons for the future in structured way?
- What programme or project is this part of? PoCs, Prototypes and Pilots will normally be done as part of a programme or project. If they are being done outside any of these, clarification of what that is the case will be needed.
- If there is a contract or purchase involved, has Procurement been consulted? How does the approach fit in with procurement processes, including considerations such as tendering thresholds, intellectual property (if working with a third party) or the contracts needed.

If you are unsure, contact the Strategy and Architecture (S&A) Team in DTS, who will be able to discuss it with you to clarify which of these things it is.

Based on whether the work is a PoC, prototype or pilot, there are three different approaches. These approaches are based on a graduated level of interest and review:

1. Proof of Concept

- Inform the S&A team
- Clarify by email:
    1. The concept(s) being tested and how it will be measured or assessed.
    2. What project it is part of.
    3. The start and end points of the work.
    4. What data will be used, i.e., the type of data and how it will be created or sourced.
    5. How it will be assessed and reviewed.
- S&A Record in the SDA PoC, Prototype and Pilot list (PPR)

2. Prototype

- Inform the S&A team
- Clarify by email:

1. What is being prototyped and how it will be measured or assessed
2. What project it is part of.
3. The start and end points of the work
4. What data will be used, i.e., the type of data and how it will be created or sourced.
5. How it will be assessed and reviewed.

- Discuss at a Solution Design Authority meeting for assurance.
- SDA Record in the SDA PoC, Prototype and Pilot list (PPR)

3. Pilot:

A pilot uses live data and is used to deliver live service. If not approached properly, pilot solutions can be more risky than 'normal' implementations as they are sometimes less well thought through and tested and are more likely to have been rushed. Therefore, pilots go through the normal implementation and service transition processes, including the Solution Design Authority. As a pilot is part of a normal implementation, it doesn't get recorded in the PPR

The standard implementation process includes:

- Solution Design Authority (SDA)
- Definition of service transition
- Change Board
- Decommissioning process

Appendix A - Considerations

How does this policy support the LSE EDI approach? Has an equality impact assessment been completed?	Not required for this policy.
How does this policy support LSE's sustainability targets? How will sustainability KPIs be affected by this policy?	This policy does not affect our sustainability KPIs.
How does this policy improve the position on security and privacy? If there is an impact has this policy been reviewed and endorsed by IGMB?	PoCs, pilots and prototypes are often implemented at speed, with risk and decommissioning. This policy ensures that when we implemented them they follow an appropriate process and are decommissioned in a controlled way. These are things which help to reduce risk and make sure that we manage these solutions in a more considered way, which supports better security and privacy controls.
How does this policy improve the operational objectives including service quality?	This policy improves our operational objectives for service quality through the more considered implementation of solutions that follow due process. These processes are aimed at supporting service quality.

Review schedule

Review interval	Next review due by	Next review start
1 year, for first year, then 2 years	Jan 2026	Dec, 2025

Version history

Version	Date	Approved by	Notes
1.0a	5th Nov, 2021	Architecture Board	
1.0c	24th Jan, 2022	DTDMB	
1.0d	9th Feb, 2022	Dir D&A	Minor update with DTDMB comments
1.1	19 Jan, 2024		• Added references to storing a record in the SDA • Updated contacts

Links

Reference	Link

Contacts

Position	Name	Email	Notes
Director of Strategy and Architecture	Tony Payne	A.Payne1@lse.ac.uk	

Communications and Training

Will this document be publicised through Internal Communications?	Yes/ **No**
Will training needs arise from this policy	**Yes** / No

Communications will be done via:

1. Notification to DTS via Teams
2. Communication at DTS Service Leaders' Group
3. Notification to Business Led Technology Teams via Teams
4. Notification to the Business Improvement Unit via Teams or email
5. Communication at the Business Led Technology Teams Ops Forum
6. Email notification to any other interested parties, not covered by these groups
7. Updates, eg termly, at DTS All Staff meetings on policy writing, including all new policies