ARCHIVER
Archiving and Preservation for Research Environments

Information Session Webinar
7th February 2020

João Fernandes – ARCHIVER Project Coordinator (CERN)
Joshua Luke Davison – ARCHIVER Procurement Officer (CERN)

Agenda for today

☁ ARCHIVER Project Overview
- João Fernandes (CERN)

☁ Pre-Commercial Procurement Methodology and ARCHIVER Request for Tenders
- Joshua Luke Davison (CERN)

Project Objective

Focus: Archiving and Data Preservation Services using commercial cloud services to be available via the European Open Science Cloud (EOSC)

Total Budget : 4.8M euro ; Procurement R&D Budget: 3.4M euro

Starting Date: 1st of January 2019

Duration: 36 Months

Coordinator: CERN (Lead Procurer)

Consortium

Includes Buyers and Experts in the preparation, execution and promotion of the procurement of R&D services

Procurers - Public organisations committing funds to contribute to a joint-R&D-procurement, research data use cases and R&D testing effort

Experts – Partner organisations bringing expertise in requirement assessment and promotion activities, not part of the Buyers Group

Preferred Partners (Early Adopters)

- **Participants:**
  - Demand side public sector organisations
- **Key advantages**

  - Assess if resulting services address archiving and preservation needs

  - Contribute and shape the R&D carried out in the project, contribute with use cases and have the option to purchase pilot-scale services by the end of the project

- **Confirmed subscription received from 11 organisations:** ➡ *High level of interest from the community*

Information Webinar (04th September) = **47 participants**

Motivation

Current Status of Scientific Data Repositories

- *Growing data volumes*
- *Basic bit preservation and archiving capabilities*
- *Longstanding archiving and preservation activities, but most of data not yet published*
- *Fragmentation across scientific disciplines*
- *Underestimation of costs at the planning phase*

ARCHIVER D2.1- State of the Art, Community Requirements and OMC Results:
https://zenodo.org/record/3618215#.XjFsi-pKiqA

ARCHIVER
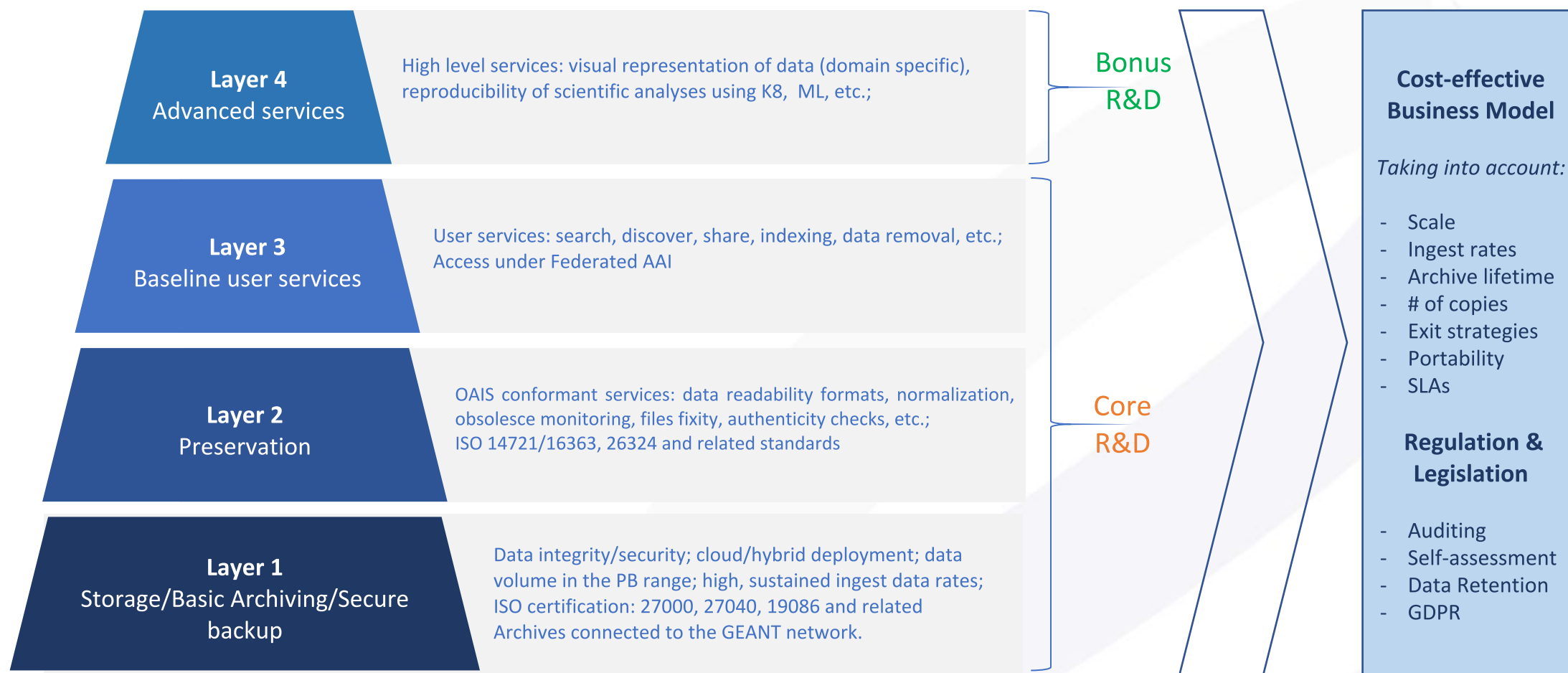ARCHIVING AND PRESERVATION FOR RESEARCH ENVIRONMENTS

- *Demonstrate services for long-term preservation and archiving in the PB range of scientific data*
- *F.A.I.R archiving services following best practices and standards*
- *Expand resulting services to several scientific domains*
- *Transparent business models and make resulting services available through the EOSC catalogue*

EUROPEAN OPEN SCIENCE CLOUD

Outcome: R&D Challenge

Layer 4
Advanced services

High level services: visual representation of data (domain specific), reproducibility of scientific analyses using K8, ML, etc.;

Layer 3
Baseline user services

User services: search, discover, share, indexing, data removal, etc.;
Access under Federated AAI

Layer 2
Preservation

OAIS conformant services: data readability formats, normalization, obsolesce monitoring, files fixity, authenticity checks, etc.;
ISO 14721/16363, 26324 and related standards

Layer 1
Storage/Basic Archiving/Secure backup

Data integrity/security; cloud/hybrid deployment; data volume in the PB range; high, sustained ingest data rates; ISO certification: 27000, 27040, 19086 and related Archives connected to the GEANT network.

Bonus
R&D

Core
R&D

Cost-effective Business Model

Taking into account:

- Scale
- Ingest rates
- Archive lifetime
- # of copies
- Exit strategies
- Portability
- SLAs

Regulation & Legislation

- Auditing
- Self-assessment
- Data Retention
- GDPR

Scientific use cases deployments documented at: https://www.archiver-project.eu/deployment-scenarios

Project Timeline
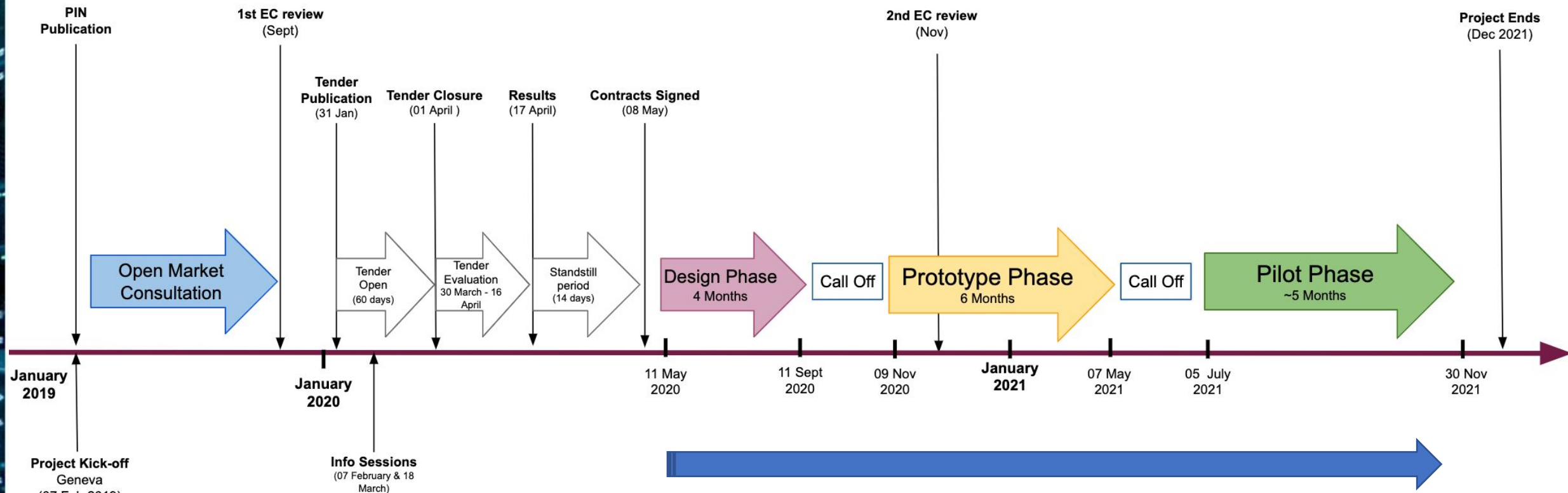
ARCHIVER R&D Implementation Phases

European Open Science Cloud - The Vision

*"We are **creating a European Open Science Cloud now**. It is a trusted space for researchers to store their data and to access data from researchers from all other disciplines. We will create a pool of interlinked information, a **'web of research data'**. (…) The idea is that once we have the rules of the game ready, then **we will open this up to the broader public sector and to business as well. So that companies can come in, store the data and use the data.**"*

Special Address by Ursula von der Leyen, President of the European Commission, 22nd January, WEF DAVOS 2020
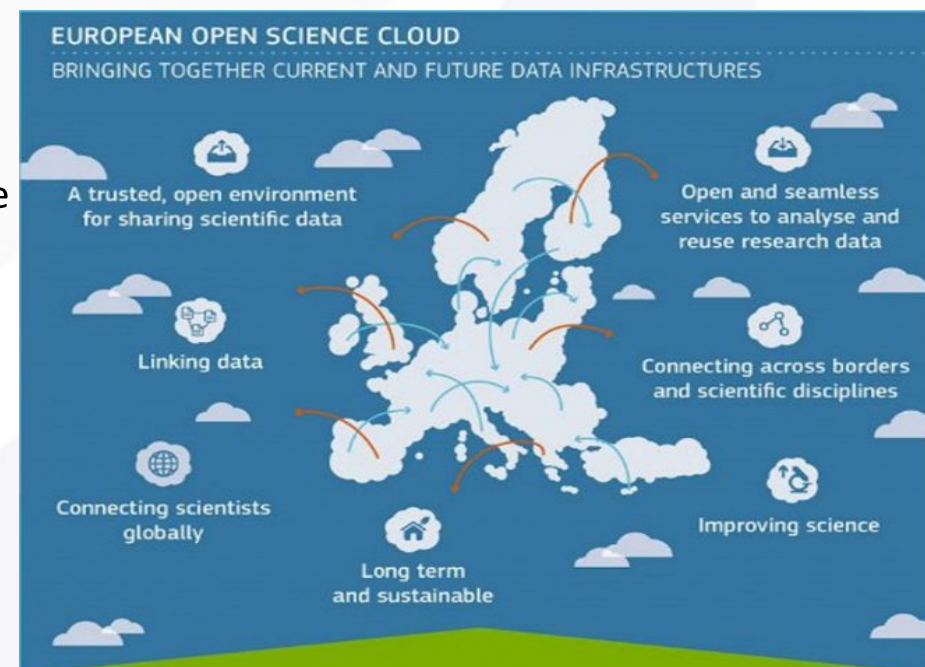https://www.youtube.com/watch?v=QN476nVbFVs&feature=youtu.be&t=682

Role of the EOSC:

To ensure that 1.7 million European researchers and 70 million professionals in science and technology reap the full benefits of data-driven science

- Federated virtual environment
- Open services for storage, analysis and re-use of research data
- Promote a pan-European and multidisciplinary research approach

Phase 1 investment of EUR 300 Million on EOSC core services
EOSC legal entity expected to be created by the end of 2020

EUROPEAN OPEN SCIENCE CLOUD
BRINGING TOGETHER CURRENT AND FUTURE DATA INFRASTRUCTURES

A trusted, open environment for sharing scientific data

Open and seamless services to analyse and reuse research data

Linking data

Connecting across borders and scientific disciplines

Connecting scientists globally

Improving science

Long term and sustainable

EOSC should provide a level playing field – same requirements for commercial and not-for-profit providers

Accept commercial services in Data Mgmt. Plans
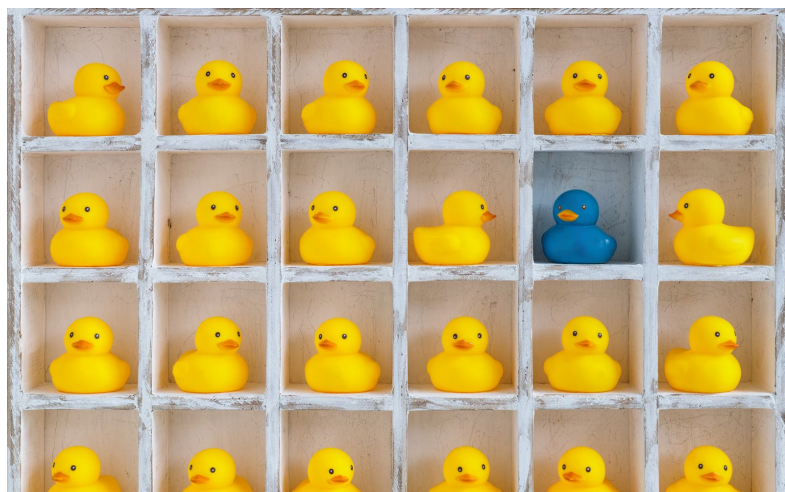
Stay mainstream and interoperable by adopting widely used and internationally recognized standards

Promote choice, an ecosystem for innovation, fostering data self-determination and digital sovereignty in Europe

https://www.spielwarenmesse.de

ARCHIVER key contributions for the EOSC

Long-Term Archiving and Preservation of Research Data at the core strategy of the EOSC

ARCHIVER key in defining EOSC Rules of Participation for the private sector both as service providers and as R&D partners for "close to market" solutions
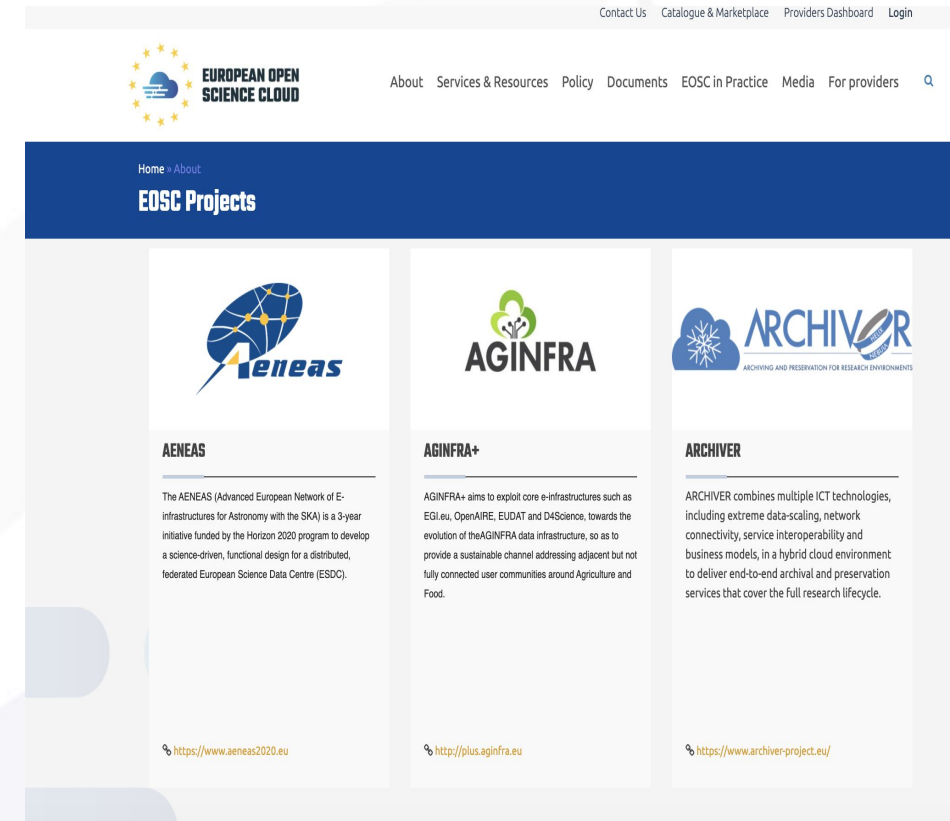
List of 40+ EOSC projects available at: https://www.eosc-portal.eu/about/eosc-projects

ARCHIVER services in the European Open Science Cloud

2019   **2020**   **2021**   **2022**   **2023**   **2024**
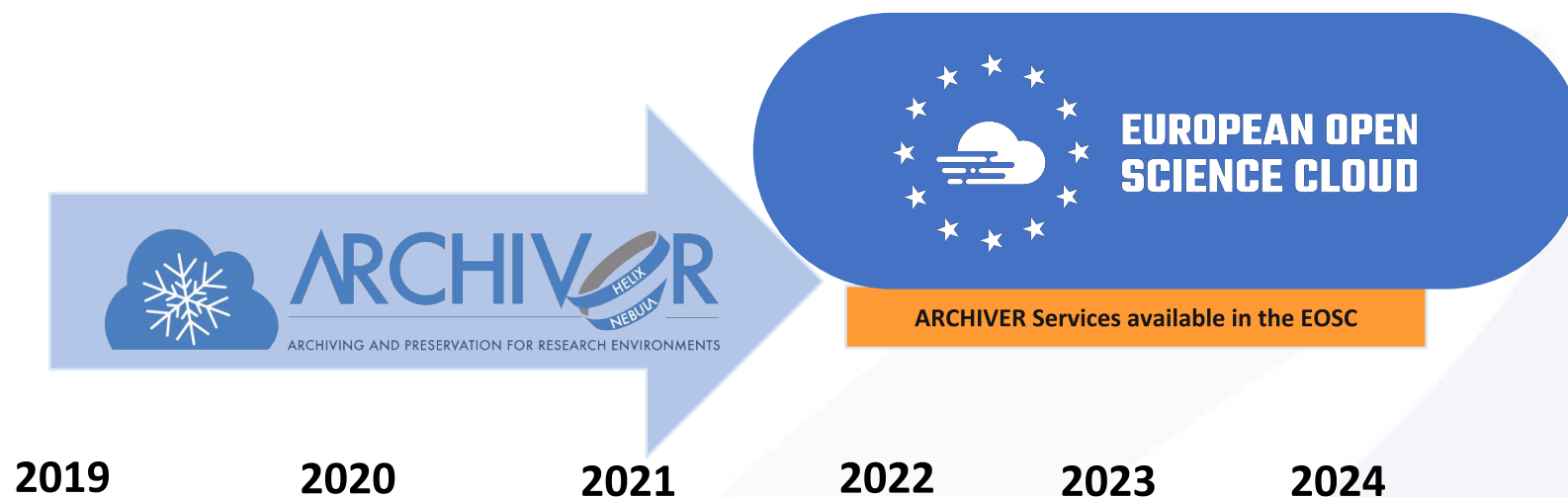
- Make resulting services available in the European Open Science Cloud catalogue

- *"As a researcher, I want to have access to the full set of ARCHIVER services, so that, I'm able to evaluate their functionality for my specific research field, able to purchase them with a clear cost model, and implement an exit strategy to be able to repatriate or move my research data seamlessly to another location by the end of the contract and usage period."*

Summary

- ARCHIVER aims to develop a set of commercial, FAIR, archiving and preservation services for research data
    - Petabytes of research data in multiple scientific domains
    - Open, trustworthy, aligned with best practices (ISO, OAIS, CoreTrustSeal)
    - Strong preference by Open Source Software, Open Standards as measures to prevent vendor lock-ins

- Set of "derived rules" for commercial services onboarding in the EOSC
    - Technical: extensive field testing, "research data ready" archiving and preservation services
    - EU legislation: develop high quality digital services guaranteeing digital sovereignty
    - Financial Models: adapted to research considering public procurement cycles and research grants periods, allowing effective cost planning for LTDP

- ARCHIVER R&D activity will start May 2020
    - Selected companies will be providing R&D services
        - 3 competitive phases: Design (2020), Prototype (2020/2021) and Pilot (2021)

What is a PCP?

- A phased, competitive approach to purchasing R&D services for the development of innovative solutions not yet available on the market

- Risk- and benefit-sharing contracts based on a functional specification

- Aim to solve socio-economic challenges and improve the performance or functionality of public services
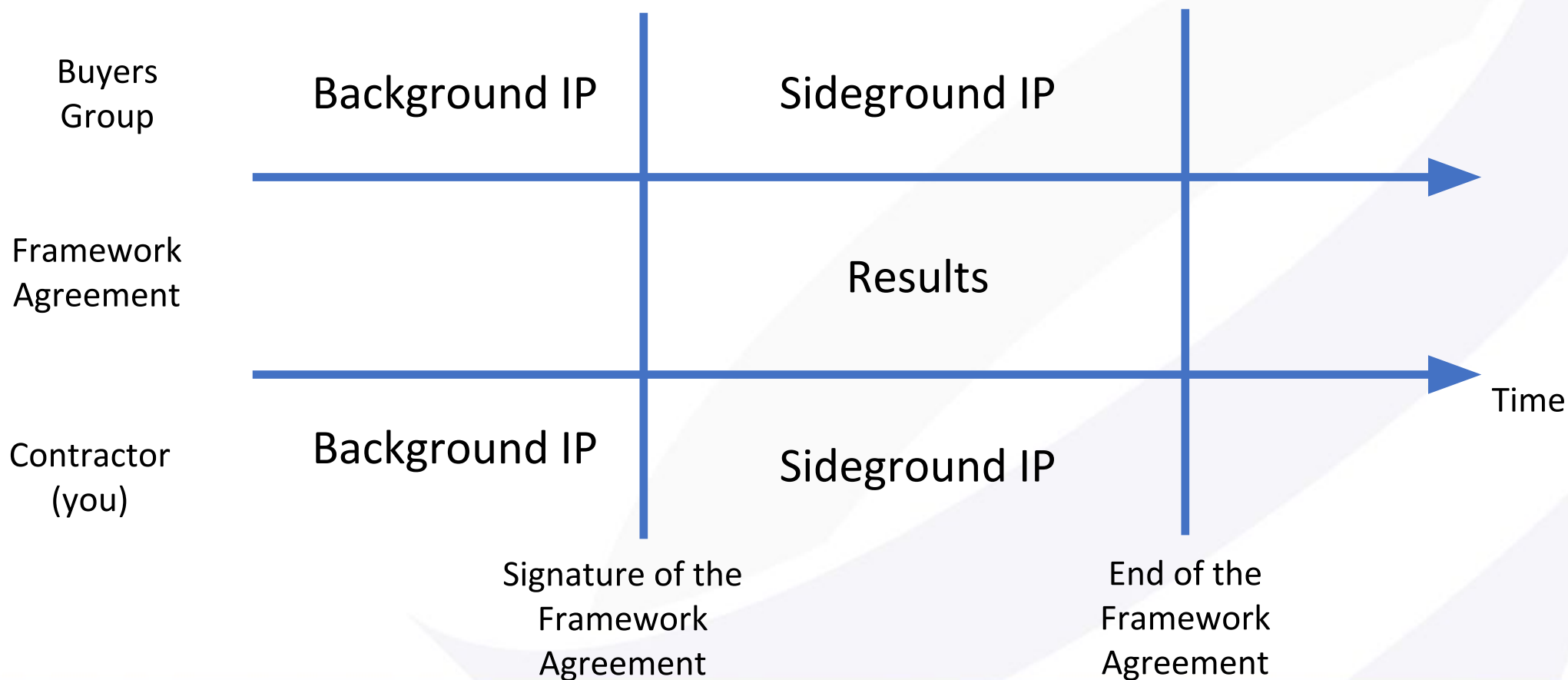
Legal Framework

- Exemption from EU Procurement Directives for R&D services – no commercial development activities

- Specific legal framework for Horizon 2020 PCP actions

- Procurement at market rates with risk- and benefit-sharing to preclude state aid

- General principles: equal treatment, no conflict of interest, transparency, openness, competition and best value for money

Risk- and benefit-sharing

- PCP is contrasted with a situation of 'exclusive development':
  - The contractor retains ownership of the IP developed during the PCP and is encouraged to commercialise it;
  - Payment is conditional on satisfactory performance not on successful innovation.

- The 'actual price' that the buyer pays under a PCP is less than the 'virtual price' he would have paid in a situation of exclusive development
  - There is some 'cost sharing' by the contractor in return for the additional risks taken by the buyer and the IP benefits retained by the contractor

Intellectual Property Ownership

Buyers
Group

Background IP — Sideground IP

Framework
Agreement

Results

Contractor
(you)

Background IP — Sideground IP

Time

Signature of the
Framework
Agreement

End of the
Framework
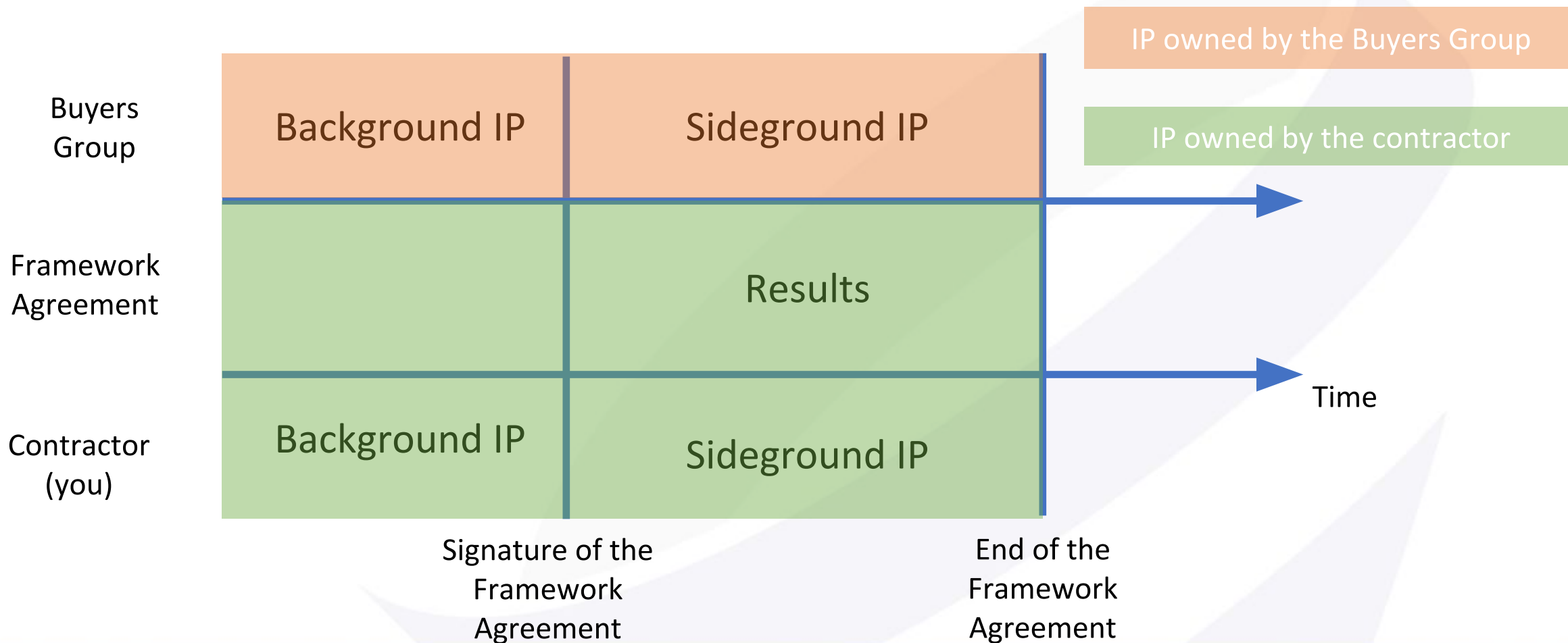Agreement

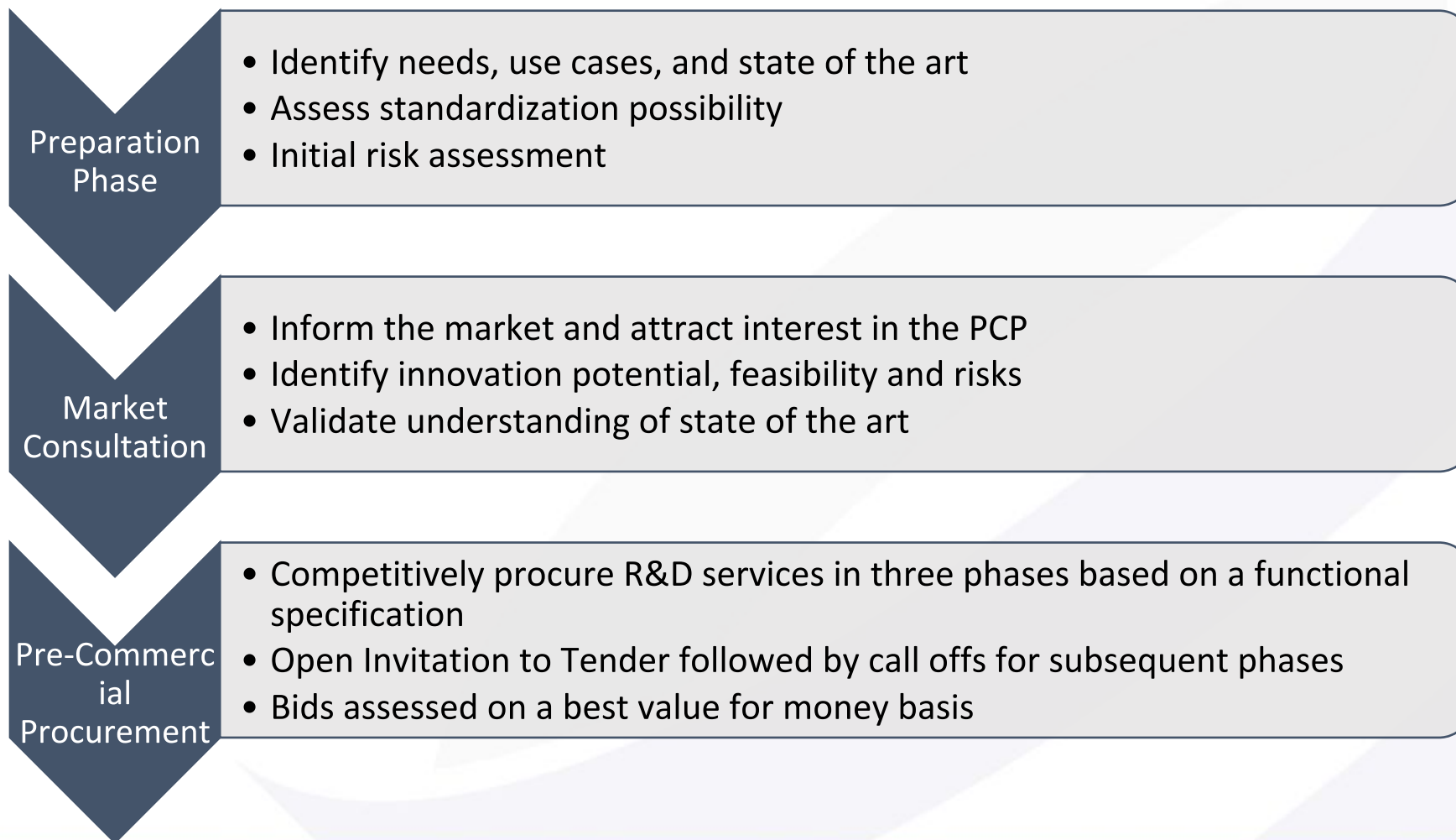# Intellectual Property Ownership (Traditional R&D Contract)
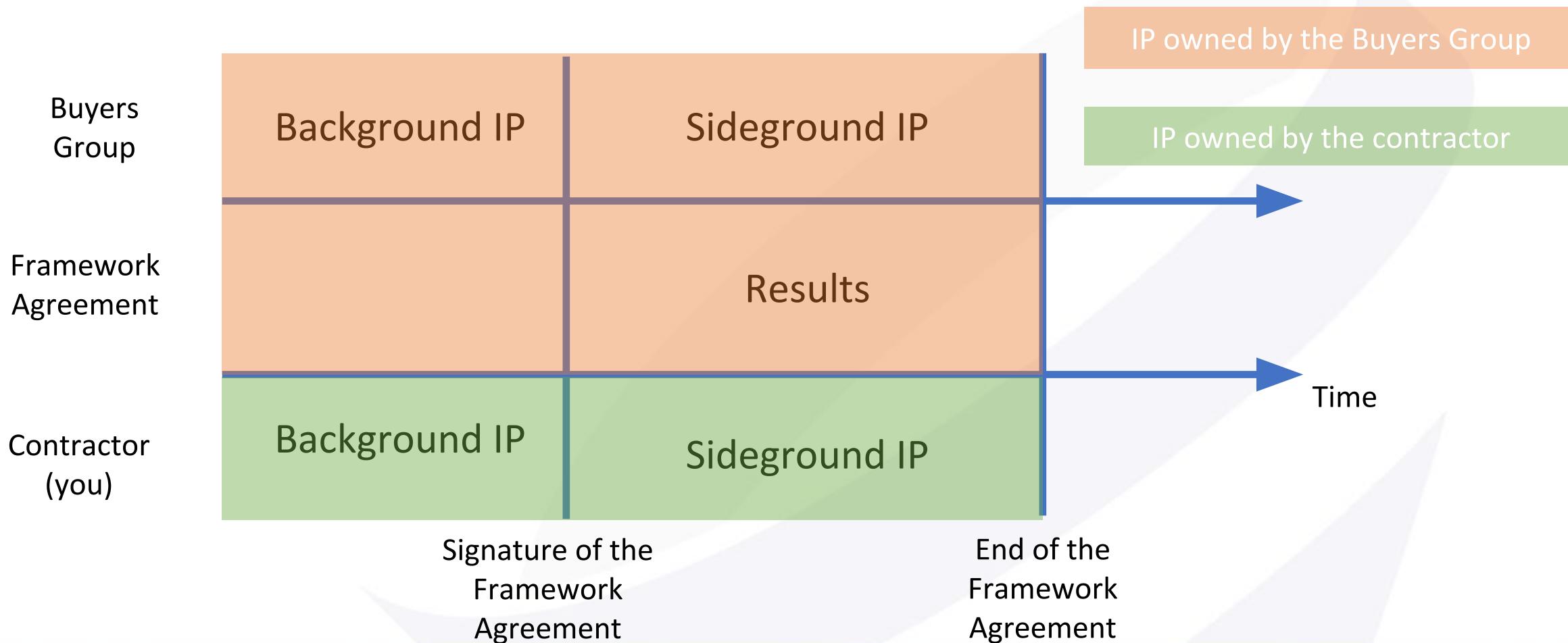
Intellectual Property Ownership (PCP Contract)

IP owned by the Buyers Group

IP owned by the contractor

Buyers Group

| Background IP | Sideground IP |

Framework Agreement

Results

Contractor (you)

| Background IP | Sideground IP |

Signature of the Framework Agreement

End of the Framework Agreement

Time

PCP Concept: Three Phases

Preparation Phase
- Identify needs, use cases, and state of the art
- Assess standardization possibility
- Initial risk assessment

Market Consultation
- Inform the market and attract interest in the PCP
- Identify innovation potential, feasibility and risks
- Validate understanding of state of the art

Pre-Commercial Procurement
- Competitively procure R&D services in three phases based on a functional specification
- Open Invitation to Tender followed by call offs for subsequent phases
- Bids assessed on a best value for money basis

Open Market Consultation

- A process to bridge the gap between demand and supply sides and scope the future PCP

- Check our understanding of the state of the art

- Map the risk and innovation potential

- Inform, connect and generate interest from potential providers

- Final report and all information released during the OMC are available at https://zenodo.org/record/3618215 and https://www.archiver-project.eu/archiver-open-market-consultation-roadmap

ARCHIVER Request for Tenders

- Access the Tender documents now here:

  https://www.archiver-project.eu/request-for-tender

Navigating the documents

Document Name	Description
Read Me First	A directory of the Request for Tender documents and key dates
Request for Tenders	Information about the PCP concept, the ARCHIVER project aims, the tender process and conditions, and the evaluation process
Functional Specification	Detailed description of the R&D challenge and the end-user applications
Deliverables and Milestones	List of the deliverables and milestones to be provided by the contractor on which assessment and payment will be based
Framework Agreement	The framework contract that successful Tenderers will sign, covering the services provided through all three PCP phases
Work Orders	The format of the work orders that will be signed by the lead Procurer and successful Tenderers to engage work for a particular phase
User Access Policy	The terms of access and use of the prototype/pilot platform, to be signed by the successful Tenderer with each procurer

Documents to be completed by you

Document Name	Purpose
Annex 1: General Tender Submission Form	Description of consortium members, subcontractors, and declaration of compliance with exclusion criteria
Annex 2: Qualification Questionnaire	Declaration of compliance with the selection criteria
Annex 3: Compliance Questionnaire	Declaration of compliance with compliance criteria
Annex 4: Evaluation Questionnaire	Description of the award criteria used to attribute a quality score to the Tenders, including response and scoring guidance for Tenderers
Annex 5: Financial Offer	Format for the financial offer

Annex 1: General Tender Submission Form

- Provides details about the entities involved in the Tender:
  - Single Tenderer OR Consortium
  - Consortium members
  - Subcontractors constituting 10+ % of the value of Phase 1 (note the restrictions in section 4.1.2 of the RfT)

- Declaration of compliance with exclusion criteria:
  - A single or lead tenderer cannot cannot be a single tenderer or consortium member in any other tender

- Declaration of Background IP

- Signature by all consortium members and subcontractors

Annex 2: Qualification Questionnaire

- Declaration of compliance of the Tenderer with the selection criteria and supporting information

- Selection criteria: minimum requirements that the Tenderer must meet in order to be eligible for the ARCHIVER PCP, relating to:
  - Technical experience and competence
  - Size and contract management abilities
  - Ability to carry out R&D and commercialise and protect the results

Annex 3: Compliance Questionnaire

- Declaration of compliance of the Tenderer with the compliance criteria

- Compliance criteria: minimum PCP-specific requirements that the Tender must meet, including:
  - The majority of the value of the Tender over all three Phases shall be constituted by R&D services (definition in section 3.1 of RfT)
  - The majority of the R&D services over all three Phases and the principal researchers working for the PCP Contracts shall be located in EU Member States or Horizon 2020 Associated Countries

Annex 4: Evaluation Questionnaire

- Award criteria and scoring mechanisms that will be used by the buyers group to attribute a technical score to the Tender

- The Tenderer will provide supporting information to explain how its Tender meets each of the specified award criteria

- The technical evaluation will be made on the basis of the scoring guide provided

Annex 5: Financial Offer

- Binding actual and virtual prices for Phase 1

- Binding unit prices and hourly rates payable over all three Phases

- A full breakdown of the virtual price for Phase 1 allowing the Buyers Group to confirm the Tender's compliance with the Compliance Criteria

- Estimated virtual prices for Phases 2 and 3

- Note that prices shall be exclusive of VAT

Procurement budget

	Maximum budget available (EUR)	Expected minimum number of Contractors	Maximum budget per Contractor (EUR)
Phase 1	425 000	5	85 000
Phase 2	1 275 000	3	425 000
Phase 3	1 700 000	2	850 000

- Total procurement budget of 3.4 MEUR

- Actual prices must be within the allocated budgets

Clarification Process

- Use the form in Appendix C of the Request for Tenders document

- Send the form by email to procurement.service@cern.ch

- Requests for clarification must be sent before 10 March 2020 at 4pm Geneva time (requests for clarification received after this date will not be answered)

- All questions and answers will be anonymized and published on the ARCHIVER project website. They will also be sent to all firms that indicated they intended to submit a Tender when they accessed the Tender documents

- Questions will be answered by 18 March 2020

Submitting a Tender

- Only Tenders submitted on the CERN Document Server (CDS) in accordance with the instructions in the RfT will be valid

- To access CDS, you will need to create a lightweight account: https://account.cern.ch/account/Externals/RegisterAccount.aspx

- Please start to upload your Tender early (at least two hours before the deadline)

- Detailed instructions in Appendix B of the RfT

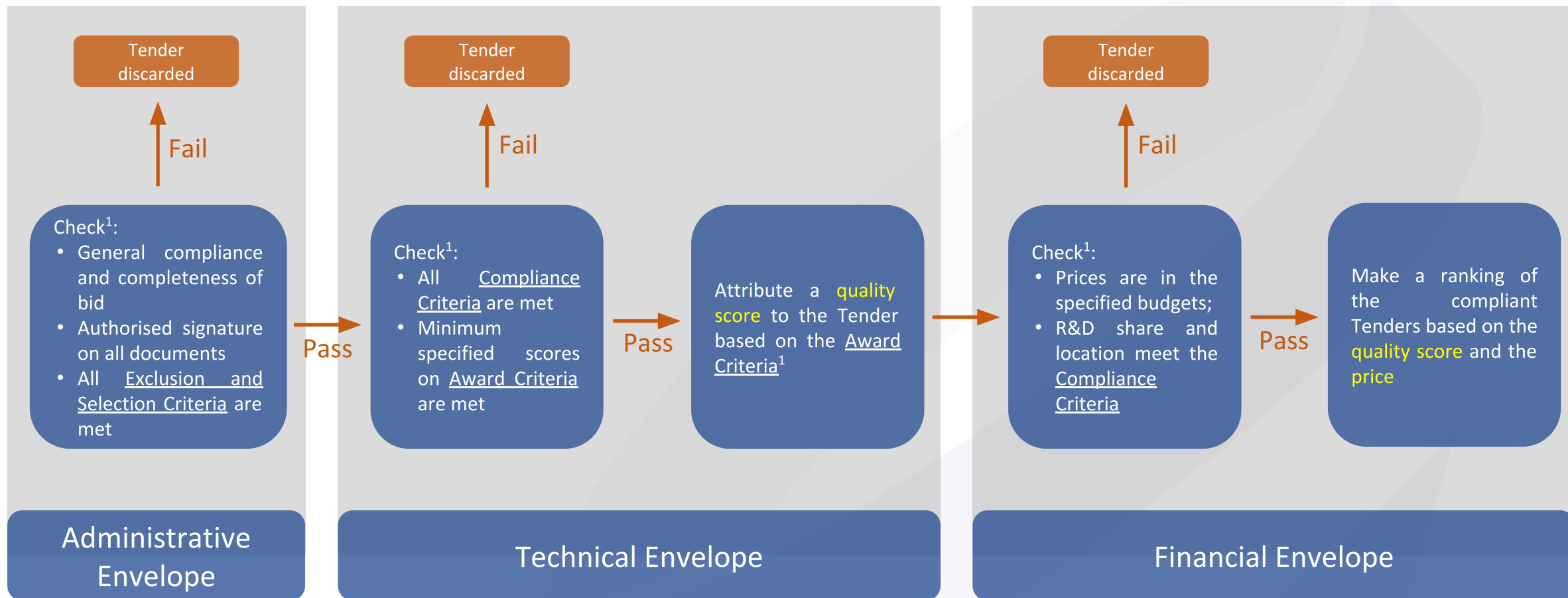- For questions related to CDS, please contact procurement.service@cern.ch

Triple Envelope Procedure

- Firms indicating that they intend to submit a Tender when they access the RfT will be sent three CDS links:
  - IT-4531/ADMIN
  - IT-4531/TECHNICAL
  - IT-4531/FINANCIAL

Triple Envelope Procedure

- Tenderers shall upload their administrative offer onto the IT-4531/ADMIN page:
  - Annex 1: General Tender Submission Form
  - Annex 2: Qualification Questionnaire

- Tenderers shall upload their technical offer onto the IT-4531/TECHNICAL page:
  - Annex 3: Compliance Questionnaire
  - Annex 4: Evaluation Questionnaire

- Tenderers shall upload their financial offer onto the IT-4531/FINANCIAL page:
  - Annex 5: Financial Offer (one signed PDF and one Excel)

- Refer to section 4.2 of the RfT for instructions

Evaluation Process

Administrative Envelope

Check[1]:
- General compliance and completeness of bid
- Authorised signature on all documents
- All Exclusion and Selection Criteria are met

Fail → Tender discarded

Pass →

Technical Envelope

Check[1]:
- All Compliance Criteria are met
- Minimum specified scores on Award Criteria are met

Fail → Tender discarded

Pass →

Attribute a quality score to the Tender based on the Award Criteria[1]

Financial Envelope

Check[1]:
- Prices are in the specified budgets;
- R&D share and location meet the Compliance Criteria

Fail → Tender discarded

Pass →

Make a ranking of the compliant Tenders based on the quality score and the price

[1] Tenderers may be asked to provide clarifications as part of this step

Technical Review Board

- Attributes a technical score

- One voting technical representative of each Buyer

- Chaired by the Procurement Officer of the Lead Procurer (no voting rights)

- Each voting member independently attributes draft scores, then the board collectively attributes a final score (in principle, by consensus)

Evaluation Process

Total Weighted Score = Weighted Quality Score + Weighted Price Score

$$Weighted\ quality\ score\ =\ Quality\ weight\ \times\ \frac{Quality\ score\ for\ Tender\ X}{Highest\ possible\ quality\ score}$$

$$Weighted\ price\ score\ =\ Price\ weight\ -\ 50\ \times\ \left(\frac{Price\ for\ Tender\ X}{Price\ of\ the\ lowest\ Tender}\ -\ 1\right)$$

Total Score - Weightings (Phase 1)

Price

Non-Technical Quality Score

Technical Quality Score

Evaluation Process

- Note that no negotiation is possible

- Do not propose changes to the RfT requirements as part of your Tender (including the Framework Agreement)

- Do not anticipate negotiation after the Tender has been submitted

ARCHIVER Request for Tenders: Key Dates

- 30 January 2020: Publication date

- 7 February 2020: First information session

- 10 March 2020: Deadline for requesting clarification

- 18 March 2020: Second information session and deadline for responses to clarifications

- 31 March 2020 4pm Geneva time: Deadline