Accelerating the remote monitoring market through partnership

Partnering with the remote monitoring industry to accelerate the value of technology for patients

Roundtable report

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Health Innovation Network
South London

NHS England
London Region

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1. About

Remote monitoring technology offers the promise of improved patient care. However, identifying and engaging with the right suppliers in the right way remains a significant challenge.

NHS England – London region commissioned the Health Innovation Network (HIN) to explore how partnerships can help accelerate the remote monitoring market in a way which best meets the needs of patients and clinicians. The work aims to support operational, digital and clinical teams interested in procuring remote monitoring technology.

This report summarises insights from two roundtables, hosted by the HIN, involving procurement, commercial and legal experts to discuss potential approaches and solutions to real-world challenges in this area posed by senior NHS stakeholders.

The report begins by summarising the challenges of getting the right remote monitoring technology as the market and pathways evolve. It then looks at principles for co-development, followed by exploring specific mechanisms to drive partnership working, including pre-procurement market engagement, intellectual property (IP) sharing and pilots.
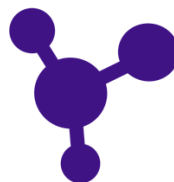
2. Challenges to remote monitoring partnerships

"Navigating the SME [small to medium-sized enterprise] market is a difficult endeavour for many providers trying to deliver improved healthcare at rapid pace in response to increasing demands from the system. These recommendations come at a crucial time for the NHS" – CCIO"

NHS leaders procuring remote monitoring (RM) technology have reported challenges navigating the volume and diversity of solutions currently available. The market remains in a growth phase, with many products offering a range of situationally-appropriate functionalities, but system leaders consistently suggest that no single solution fully meets every potential need.

Many organisations rapidly implemented RM solutions during COVID-19, resulting in various RM solutions being used across London. Between four and seven different suppliers offer remote monitoring in each ICS, many of which provide specialist support for a specific patient cohort. This might be confusing for patients and staff when faced with multiple products doing different things, and particularly challenging for patients with more complex pathways. Data could end up in siloed systems, inaccessible to clinicians who need it to be easily visible in real or near-real time.

"The dilemma facing healthcare providers is balancing innovative solutions which will improve the lives of our patients and their care, against the number of systems and sources of information we use, in a safe and manageable way" – CNIO

Emerging technology, evolving pathways

Part of the reason the range of suppliers is so broad is that our understanding of the value of RM and virtual ward pathways is evolving, with a continual stream of emerging insights from patients and clinicians informing changes in functionality and new technological solutions. Some examples of this evolution are:

- Early in the development of RM, there were suggestions that when patients manually entered data into the system, it would help with patient education. However, a consensus has emerged that patients do not utilise the technology as much when they have to manually upload information. As a result, several organisations have had to pivot their approach, on occasion going back out to market, causing issues around change management and continuity for staff and patients.

- Earlier in the development of the technology and pathways, it was initially thought that an off-the-shelf solution could meet pathway needs. However, it has emerged since that supplier responsiveness to emerging insights is crucial to the success of RM pathways – technologies need to evolve as we learn more about their application and benefits.

- Similarly, there was an early belief that systems might be able to effectively monitor patients within a single dashboard. However, it has since become clear that a wide range of staff require access to RM data, and if a clinician cannot see the data via their core clinical system then trust and engagement wanes. Interoperability is therefore crucial, and this requires us to work closely with suppliers to prioritise and support the key integration needs of the system.

One CIO explained a key challenge as:

"We don't know what we don't know yet around the value this technology can bring. We're at the start of that 'revolution'"

A procurement expert responded:

"In this situation, it is important to keep your options open, particularly where the market is developing and evolving. The key suppliers that you want to work with today may not be the best suppliers tomorrow"

Given the stage of the market and our evolving insights, the advice from our roundtable panel was to seek alternatives to a traditional 'one-off' procurement approach in which requirements are clearly specified in detail from the outset and result in a transactional contractor and supplier relationship. Instead, we need to adopt procurement practices that will enable developmental, agile partnerships where solutions evolve in response to patient, clinical and operational needs.

Challenges to partnership

It is unusual to find long term developmental partnership in the NHS, despite procurement and contracting mechanisms for partnership existing. The key challenges discussed by experts on the panel were:

- **Partners misunderstanding the term partnership**: Misconceptions can arise over what partnership means in a developmental partnership. Suppliers may focus on the long-term returns on investment, while the NHS organisation may enter into the partnership with a focus on flexibility and innovation. It is important to discuss and document as much as possible about principles and ways of working early on, including in the contracting stage, to mitigate misunderstanding.
- **Lack of early dialogue**: A lack of robust market engagement and discussion of commercial arrangements upfront can contribute to tensions during a partnership. A structured approach, drawing on legal, procurement and contracting expertise, is required to offset the risk of being locked into agreements for products or services that do not deliver the expected return, whether this is in terms of patient outcomes or value for money.
- **Funding timeframes**: Lack of early dialogue is often driven by the nature of transformation funding, which can be non-recurrent funds which have to be rapidly spent at short notice. The NHS annual funding cycle and preference for in-year savings constrains the time available for meaningful dialogue with industry prior to procurement. Effective market engagement needs to be driven by priorities and outcomes, not by funding timeframes. Developing the market will require partnership working over the next few years to co-define what the system needs and what technology can provide for patients.
- **New type of business case**: The ability for NHS organisations to generate a business case that accommodates both proof of concept and procurement for an asset that needs development does not presently exist.

3. Co-developing digital solutions: principles

While there are challenges to co-developing digital solutions in partnership, the roundtable panel discussed principles for establishing a successful partnership, including:

1. Defining what is fixed and what is flexible

Although services may not yet be in a position to define their future needs in detail, they may be able to specify the core parameters required to establish developmental partnerships - starting points, what they are looking for in a supplier, the financial envelope, the outcomes they are aiming for and that all needs are iterative and subject to change. They can then work with suppliers to co-develop and articulate a longer-term vision together in an iterative and agile way, so long as the mechanisms for doing so and the constraints (e.g.: cost, timelines, roles, IP) are well-defined within the contract. Crucially, an intelligent client function is required to manage the additional risks of developing solutions in this way.

2. Deciding the purpose of test phases

When considering the right approach to testing a technology, it is important to decide the purpose of this test phase and what you want to happen post-pilot. There are two key options to consider:

a. **Are you piloting to scale?** If there is clarity on the local needs and what the solution needs to look like but uncertainty about the appropriate supplier, procure a pilot. Procuring a pilot with clear criteria on what outcomes need to be delivered by when will enable a smoother transition to roll out. The solution can be tested with a smaller subset of patients and then scaled if it delivers against requirements specified in the tender.

b. **Are you piloting to define your specification?** If the specification is unclear, contracting for a discovery phase or proof of concept will enable you to define the requirements through testing and to better understand the potential costs and benefits. At the end of the discovery phase, you can tender out for a solution based on what has been discovered, and it should be noted in the original tender that you may transition to another solution following the conclusion of the pilot.

In either case, a developmental contract should be agreed with the requirement for iteration clearly stated. Contracts with multiple suppliers or a consortium of suppliers may be required to cover the range of patient needs across an ICS, from long term condition management to high-acuity virtual wards.

Whilst the market remains in a growth phase, our panel recommended that contracts (after piloting and discovery phases) should remain fairly short (1-3 years) to allow for new innovations to be adopted.

3. Remaining open to evolving platforms and new functionality

As services crystalise their needs and the market continues to mature, it is important for us to remain open to innovative functionality as it emerges. We need procurement and contracting processes which allow services to harness innovation safely, limiting the risk of getting locked-in to outdated technology while also reducing the inefficiencies associated with repeat procurement exercises. Rather than traditional routes of tendering or frameworks, using a Dynamic Purchasing System makes going back out to market easier because, as criteria change, suppliers can be on- or -offboarded. Individual customers are not tied to a rigid procurement structure and can map out their own mini-competitions to update requirements or

bring on new suppliers as technology and pathways evolve. The structured use of a DPS also makes it easier to pivot when an implementation is no longer meeting system needs and allows the system to harness innovation. At the same time, it is important to be aware of how changing the remote monitoring platform in its entirety could also cause disruption to the integration that has been achieved with the data infrastructure. Service delivery could also be impacted, with a new interface for patients and clinicians and additional change management expertise required.

> *"What's important about [the DPS] process is openness and transparency from a procurement perspective. Explain up front that you will have work packages and what they will broadly encompass. You don't have to prescribe, you can use an output-based specification. You're telling the market this is what you would like to do."* - Procurement Director

4. Dividing the work up into packages along a roadmap

Creating work packages within procurement and contracting helps to define the work needed to meet known requirements and the work needed to undertake iterative developments in the future. Those work packages can be specified based on outputs and tested through piloting or evaluation. By using these methods, suppliers can be incentivised to stay ahead of the curve as system needs and the market evolve. Long-term roadmap management is important to ensure that as this evolution happens, the needs of the system are rearticulated and there is transparent dialogue between NHS staff and industry.

5. Procuring a partnership

The cultural fit between organisations is key to a successful agile, developmental partnership. Cultural meshing requires careful selection, effective facilitation and an intelligent client function. This is in contrast to a traditional supplier-customer relationship, which can be characterised by demands and penalties with limited dialogue. Developmental partnerships take time, resources and commitment from both parties, along with an alignment of values and a core set of capabilities within both parties.
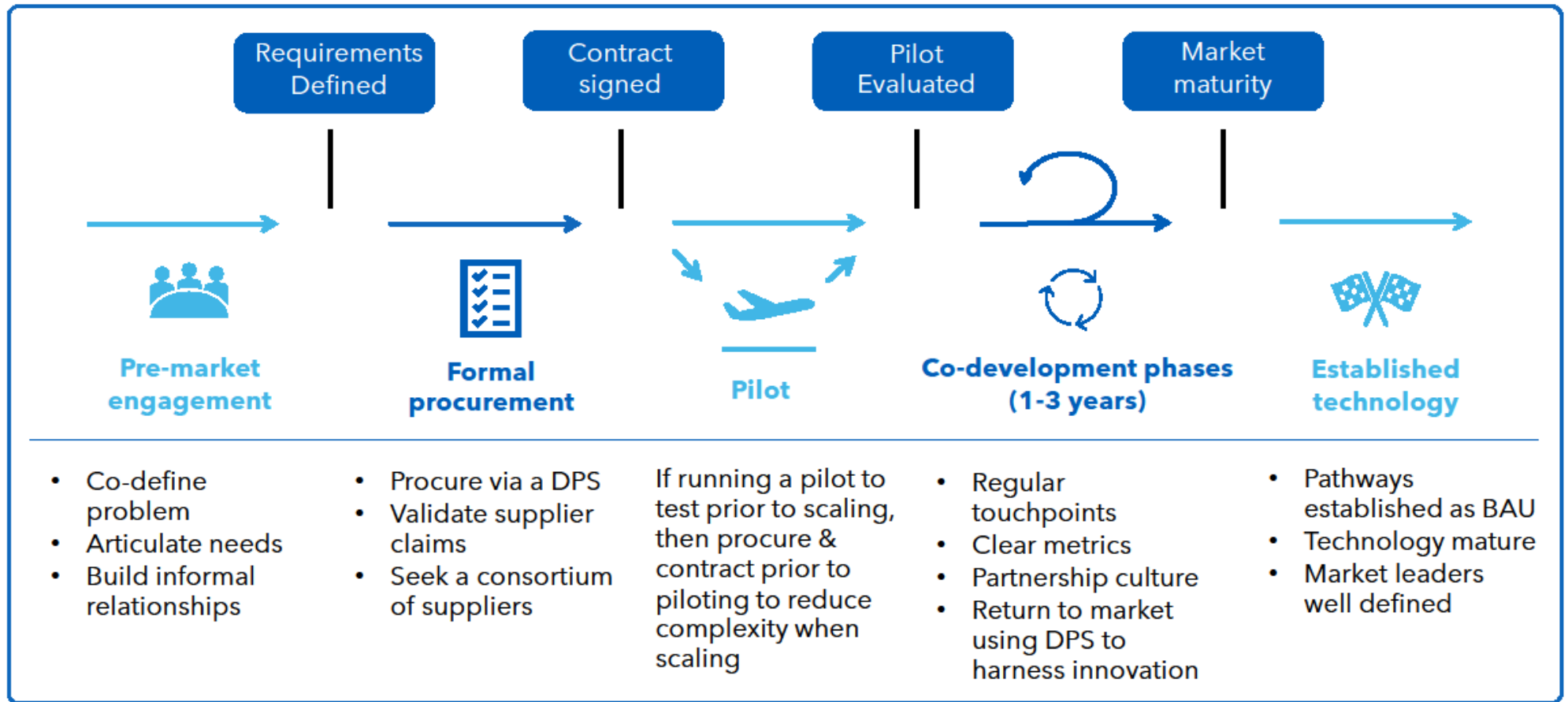
> *"Trust is hard won and easily lost. Any effective partnership needs to have a high level of trust, this means that partners must be willing to work together to solve problems collaboratively, agreeing to work in the best interests of the partnership goals."*

Selecting a supplier for partnership behaviours can be incorporated formally into the procurement process, by evaluating the cultural fit and setting a high weighting for cultural factors in the tender documents.

Where partnerships tend to fail, it is often due to a lack of clarity around expectations, roles and responsibilities that either creates risk, leads to incidents or to disputes around incentives and intellectual property. The meaning of the partnership should be clearly defined up-front from both contractor and supplier perspectives. This can involve co-defining the principles of the partnership and agreeing in writing not only core requirements but also cultural requirements and ways of working.

Remote Monitoring Technology: Market Development Roadmap

Requirements Defined	Contract signed	Pilot Evaluated	Market maturity

Pre-market engagement	**Formal procurement**	**Pilot**	**Co-development phases (1-3 years)**	**Established technology**
• Co-define problem • Articulate needs • Build informal relationships	• Procure via a DPS • Validate supplier claims • Seek a consortium of suppliers	If running a pilot to test prior to scaling, then procure & contract prior to piloting to reduce complexity when scaling	• Regular touchpoints • Clear metrics • Partnership culture • Return to market using DPS to harness innovation	• Pathways established as BAU • Technology mature • Market leaders well defined

4. Mechanisms to support co-development

The roundtable experts suggested key activities and tools to support collaboration with suppliers in developmental partnerships.

Pre-procurement market engagement

"Pre-market engagement and having that open dialogue is so crucial, as once the procurement stage is reached and you've locked-in with your desired supplier, it becomes more difficult to flex on your requirements and expectations" - Associate Director, Procurement, NHS
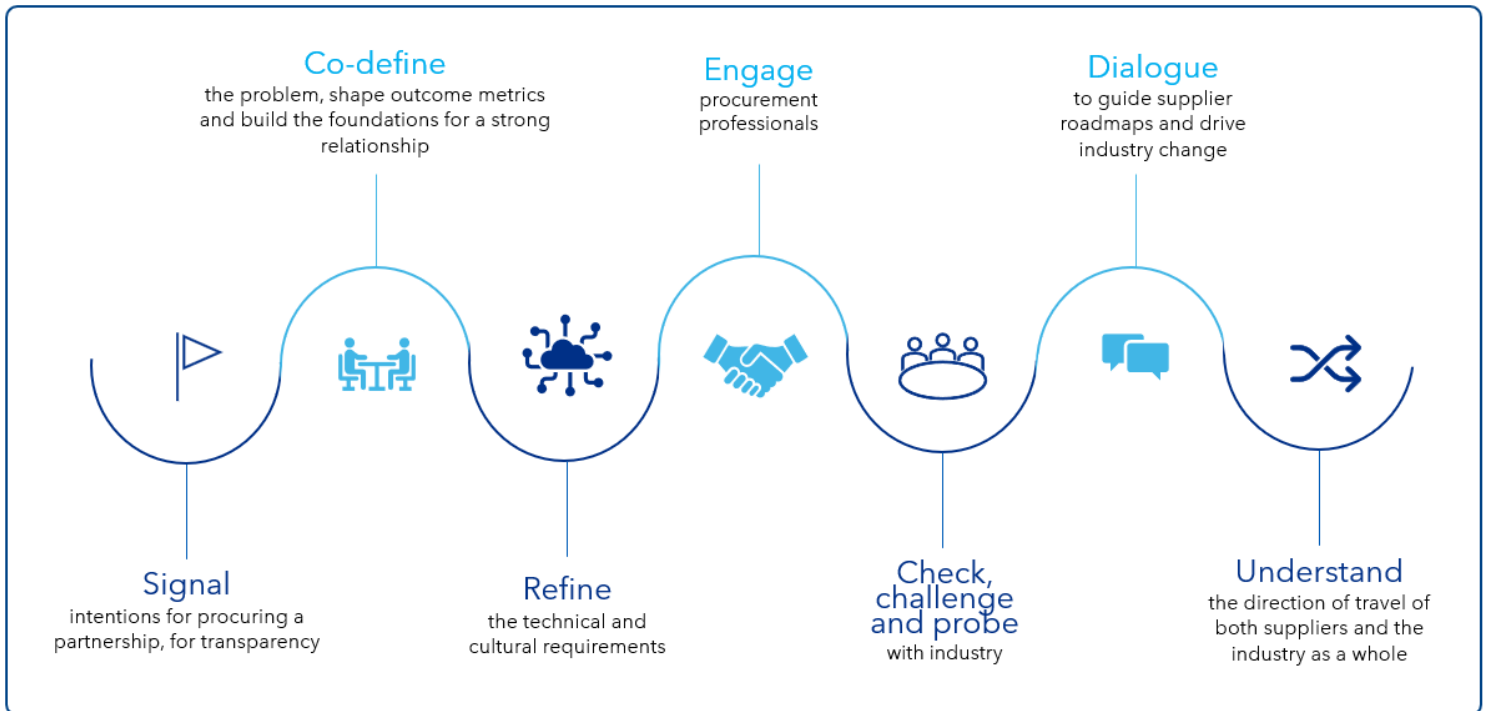

Both NHS and industry stakeholders agree that pre-procurement market engagement is crucial in successfully procuring a partnership.

Engaging with industry prior to formal procurement offers a unique opportunity to:

- Have bold conversations about the strategic vision underpinning the procurement
- Check your ideas, stimulate innovation to meet your local needs and probe for more information.
- Co-define your problem, shape outcome metrics and build the foundations for a strong relationship
- Refine the technical and cultural requirements that will populate the formal tender documents.
- Understand the direction of travel of both suppliers and the market as a whole
- Prepare industry partners for future system changes; this increased transparency is particularly useful when procuring a bespoke developmental partnership, which does not follow the norms of off-the-shelf procurement
- Shape the market and drive innovation, through open dialogue which influences supplier roadmaps and guides market direction

Across the market and with healthcare organisations, there is no standard process for pre-procurement and co-development. As such, it is beneficial to use specialist professionals to run a structured pre-market process; resources include the NHS London Procurement Partnership and the National Commercial and Procurement Hub, to ensure that the approach is coherent and meets your local needs.

Pre-market engagement: key considerations

Co-define
the problem, shape outcome metrics and build the foundations for a strong relationship

Engage
procurement professionals

Dialogue
to guide supplier roadmaps and drive industry change

Signal
intentions for procuring a partnership, for transparency

Refine
the technical and cultural requirements

Check, challenge and probe
with industry

Understand
the direction of travel of both suppliers and the industry as a whole

Pilots as a mechanism for scaling

"In the US, healthcare organizations are able to engage with SMEs and co-develop solutions and then get on and just deploy them. With pilots that are successful they have a process whereby they manage that scaling in their own contractual way. We have a real tension whereby, when we've co-developed a solution in a pilot, we want to safeguard for both ourselves and the supplier that the solution is then deliverable, but also scalable" – CCIO

Pilots can be a useful mechanism to test a technology and partnership before committing to a full contract and recurrent funding. Where an existing platform is being procured, known clinical or patient outcomes from the supplier can be used to outline expected deliverables and tolerance levels.

In practice, many remote monitoring technologies have failed to scale following the pilot phase. When deciding to pilot a solution, especially if the technology is offered for free or discounted, insufficient consideration can sometimes be given to the contractual agreements including scope for influence over the evolution of the tech and future reward sharing arrangements. Often pilots can be undertaken without a formal procurement and contracting process, where clinical teams are enthusiastic about piloting a solution locally but the procurement process and/or value of following it is unclear to them.

Pilot Case Study

One expert described including a six-month pilot phase as part of a multi-year contract depending on successful delivery during the pilot:

1. The first step involved pre-market engagement to familiarise suppliers with the approach, including the outputs and contracting process.
2. Within the procurement, the pilot was valued between 0.1% - 1% of the potential total value of the contract.
3. The supplier that delivered successfully against the requirements at the pilot phase was selected and the ICS awarded a three-year contract with a possible one-year extension (3+1 contract).

If you have a clear idea of the clinical problem and the technology to address this but want to test the solution on a small scale before committing to wider deployment, then procuring and contracting for a pilot is well worth considering. This way, you have a contract for wider deployment already in place if during the pilot the technology delivers against pre-agreed parameters, and if not, you can go back out to the market.

Entering into a contract with a pilot stage built in offers a range of benefits, such as:

- making scaling of the solution easier if the pilot is successful
- establishing yourself as a key customer willing to invest in a developmental long-term partnership with a supplier
- ensuring negotiations take place at the outset (pre-pilot) on key contractual requirements including data capture and sharing, ownership of IP and termination clauses

Outcomes-based procurement and evaluation metrics

Outcomes-based procurement offers an opportunity for flexible co-development, avoiding the need for specifications that limit procurement to a solution with specific functionality. For example, by including a requirement for reduced hospital admissions or reduced length of stay, it allows for co-development of a solution to achieve that aim. However, while this is more widely used in local government, outcomes-based procurement is unusual in the NHS, even in established services where outcomes are well known and have robust underpinning evidence.

Given the immaturity of the remote monitoring market and the need to grow the evidence base for these technologies, our roundtable experts suggested prioritising evaluation and data collection, building these into procurement processes and contracting. This will enable us to capture the data required for outcomes-based commissioning in future.

Sharing reward

NHS data and clinical expertise add significant value to the development of remote monitoring solutions, and it is important to determine how this value can be recognised. In general, suppliers are willing to explore reward sharing opportunities and can see the benefits of developing products in partnership with the NHS as an enabler to investment and future domestic and international sales. However, early conversations are important so that the terms of engagement can be co-defined. Engaging with market before going out to procurement, for example, is an ideal stage to have bold discussions about how rewards associated with IP might be shared.

There are several factors to consider when negotiating on reward sharing including the stage of product development, what each partner is investing (including money, time, knowledge, clinical expertise and data) and the level of risk they are each carrying. Although there are no templates for this, principles exist and legal advisors can draw on previous examples of partnerships. One important consideration is around whether the supplier will absorb or charge for development costs:

- If the supplier is developing features that will be beneficial to their product, and at the same time they have costed in that development time to the NHS organisation, then it is important to have a conversation about sharing of reward at an early stage, including IP sharing
- If the supplier is not charging for development costs, as they can see how the development could benefit to their product further down the line, then it may be that other ways of sharing value can be arranged, including reduced licence costs
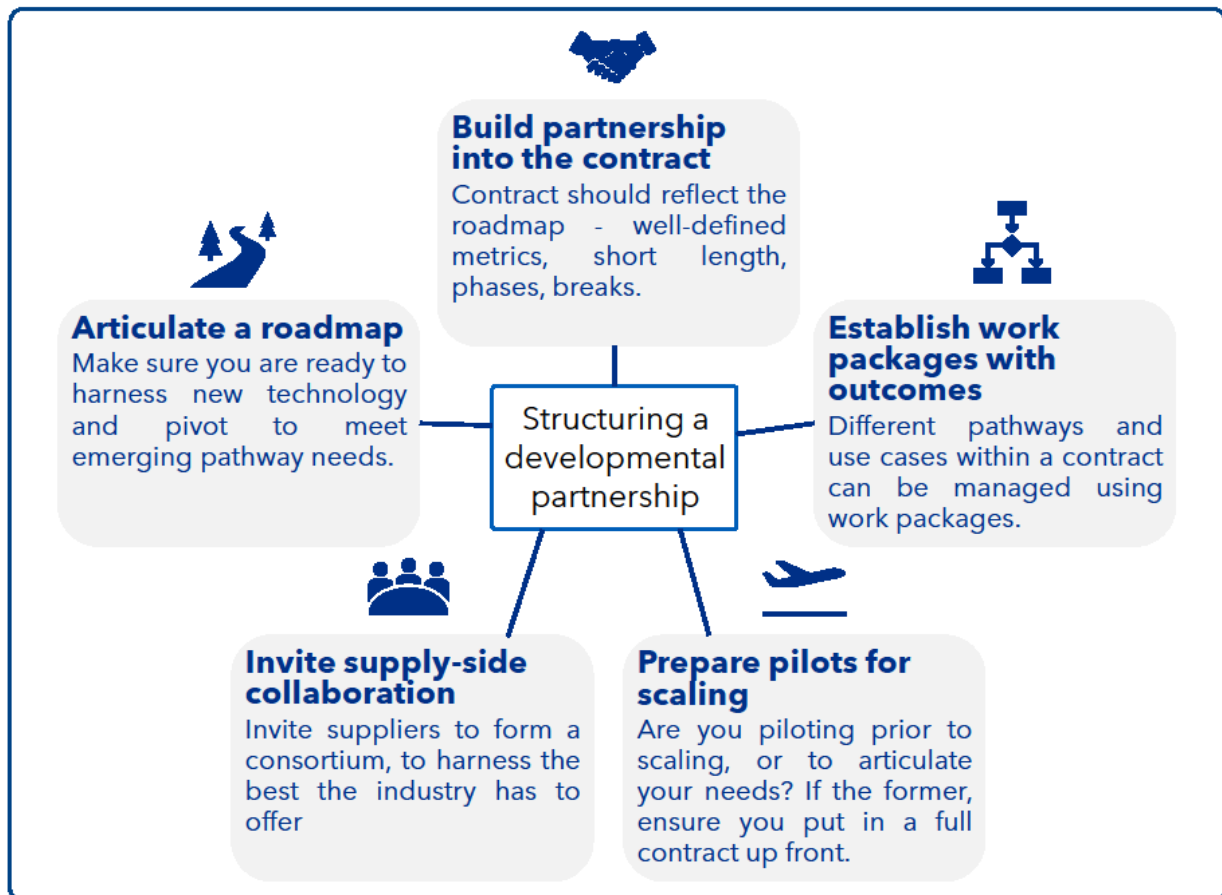
Standards and expectations

"There is a need for nationally enforced standards so that we can provide a roadmap that suppliers can work towards when co-developing solutions with the NHS." – CNIO

Successful partnerships require NHS organisations to define and effectively communicate expectations and standards to their suppliers. They are also responsible for monitoring and ensuring compliance with those standards. For example, it is now an expectation that remote monitoring suppliers use the NHS number as a unique patient identifier; however, until recently most suppliers built their systems around patient's registering using their email addresses.

Many of the innovative solutions on the market are being developed by small and medium sized companies who do not always have the resources to invest in integration with major EPRs, and therefore require clear guidance from the NHS about which integrations to prioritise. This reinforces the need for agreed and well communicated standards so that suppliers can plan against a well-defined roadmap.

Reaching a consensus on such standards can form the foundations for break clauses when negotiating pilots and contracts and provide the NHS and industry with greater clarity when navigating new partnerships. In scenarios where existing suppliers no longer meet the specified standards or do not have the flexibility to adapt, NHS contractors can explore other suppliers to ensure the best value for patients and organisations.

Structuring a developmental partnership

Build partnership into the contract
Contract should reflect the roadmap - well-defined metrics, short length, phases, breaks.

Articulate a roadmap
Make sure you are ready to harness new technology and pivot to meet emerging pathway needs.

Establish work packages with outcomes
Different pathways and use cases within a contract can be managed using work packages.

Structuring a developmental partnership

Invite supply-side collaboration
Invite suppliers to form a consortium, to harness the best the industry has to offer

Prepare pilots for scaling
Are you piloting prior to scaling, or to articulate your needs? If the former, ensure you put in a full contract up front.

Further guidance and recommendations looking at how to procure and contract for partnerships is forthcoming. Dynamic partnerships with industry offer greater opportunities for the co-development of solutions and the collaborative scaling of services. Partnership with industry and innovation in our approach to procurement will help us to realise the benefits of remote monitoring technology for patients, staff, and commissioners, allowing more patients to choose to be cared for safely in the comfort of their own homes.

NHS England - London and the HIN would like to thank all those who attended the roundtables and shared their expert insights. While the views shared at the roundtable informed the contents of the report, attendance at the round table does not imply all the individuals involved and/or their organisations endorse the views expressed.

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