



Digital Transformation

03 Assessing IT Improvements

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Distribution

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The contents of this report are confidential and should only be used by community housing providers (CHOs) to support their assessment of software suppliers.

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1. Introduction

The purpose of this document is to investigate and research the available opportunities for IT improvements needed by community housing organisations (CHOs) and document the findings with recommendations.

It is not the intention of this document to recommend any particular product or supplier that CHOs should use.

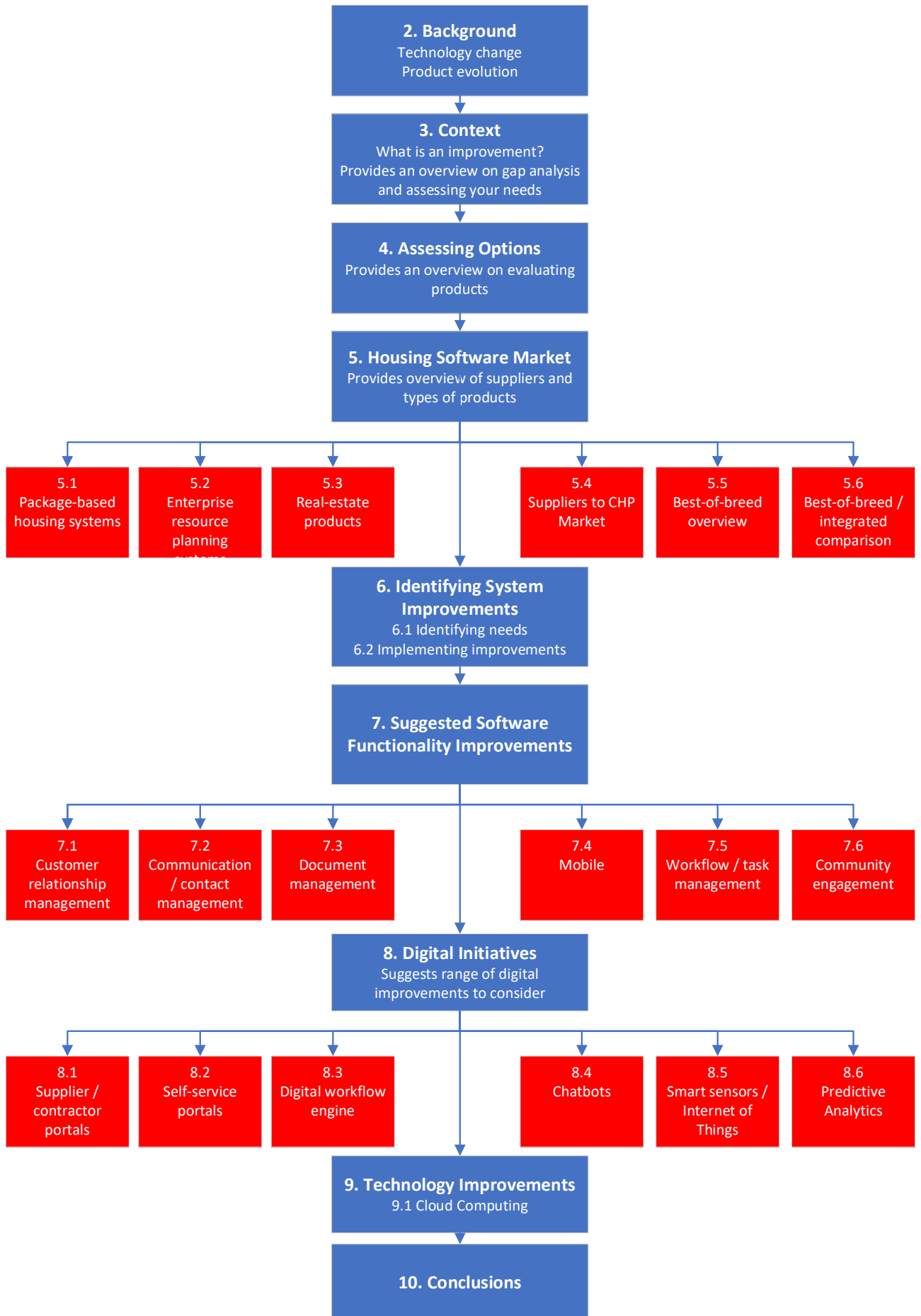
The objective is to provide sufficient information to enable CHOs to:

1. Make informed decisions on areas of value-added functionality and technology that could be utilised.
2. Directly engage with software suppliers who provide software products that can support their operations.

This document should be read in conjunction with the following:

Document Name	Description
01 Developing an IS IT Strategy.pdf	Provides a stepped-out process for CHOs on how to develop information technology and information systems strategies.
02 IS-IT Strategy Toolkit.xlsx	Aligned to the strategy document, the toolkit provides series of templates to use in defining your strategy.
04 Digital Readiness Assessment.pdf	Sets out the approach on how to determine the state of a CHO's digital readiness and the results of a survey completed by 29 CHOs in NSW and Victoria
07 Digital Transformation Implementation Guide.pdf	Set out the steps CHOs need to follow in defining and implementing digital transformation initiatives across their organisations.
08 Digital Transformation Planning Toolkit.xlsx	Provides a toolkit of templates on defining and prioritising digital objectives, defining projects aligned to objectives, assessing risk and defining a digital transformation roadmap.
09 Case Studies.pdf	Sets out a range of case studies across a selection of industries, with each study focussing on the challenge(s) that each organisation has faced, the solutions it implemented and the results that have eventuated

This document will take you through the following sections as shown overleaf:



2. Background

Technology continues to evolve and change at a rapid pace, enabling as it does so, even faster change and progress.

Over the past 10 years, many of the larger CHOs have implemented integrated tenancy, asset and finance management systems, some with mixed results. Some are now replacing what they procured 8 – 10 years ago whilst others have recently taken the decision to move away from their legacy applications which they may well have been using for some considerable time. Some CHOs may be continuing to rely on their legacy systems and infrastructure.

The key point here is that technology change will never stop. Suppliers continually invest in their product suites to remain competitive. Depending on what they do; how they do it and when they do it, the driver is to maintain competitive advantage and grow their business. Each year will witness some suppliers moving ahead in certain product areas and then other suppliers will ultimately catch up to varying degrees.... but not necessarily all suppliers will do this.

As part of their market research, most suppliers will keep up to speed with what their competitors are doing. If they don't, their market share will recede and in certain situations, it may be difficult for them to recover.

Think for a moment of suppliers or products that are no longer available or failed to move with the times.

Time magazine published its top 20 technology failures in 2017, which includes Blackberry, Dreamcast, MySpace, Netscape which is certainly worth reading¹. Other examples are the like of Kodak, where Forbes describes "there are few corporate blunders as staggering as Kodak's missed opportunities in digital photography, a technology that it invented."² Another noteworthy example of failing to change with the times in the technology industry is Wang Laboratories.³

The impact of technology on the community housing sector is of course no different. This is not to say that all suppliers to the sector will fail or not move with the times. The sector has its suppliers, most of whom are continuing to invest in their respective products and services. Furthermore, new entrants are appearing and will continue to appear. Innovation and continuous improvement are therefore crucial.

To remain competitive, suppliers must continually identify and develop enhancements to their product to remain competitive and grow their market share. Typically, one supplier will release something which will entice others to keep up.

Some suppliers may have well-defined plans to develop and release several innovative items of functionality.



¹ <https://time.com/4704250/most-successful-technology-tech-failures-gadgets-flops-bombs-fails/>

² <https://www.forbes.com/sites/chunkamui/2012/01/18/how-kodak-failed/?sh=6c4911766f27>

³ <https://www.vice.com/en/article/vvxby3/the-great-failure-of-wang-laboratories-the-david-to-ibms-goliath>

It is all part of the nature of competition.

Furthermore, suppliers are in the business to be successful and make a profit, which in turn, makes them and their products attractive to other companies, such that the latter may pursue the acquisition of the former.

Examples of this in the last 5 – 7 years in the community housing sector are:

Year	
2016	Kypera acquired by Castleton Technology plc
2017	Kinetic Information Systems acquired by Castleton Technology plc
2018	Northgate Public Services acquired by NEC Corporation
2020	Castleton Technology plc acquired by MRI Software
2020	Assetic acquired by Dude Solutions
2022	SDM Housing Software acquired by Volaris Group
2022	Planon acquires a majority stake in SPM Assets

If your current supplier does not have a product roadmap, you need to be asking them why.

If it does, this clearly shows its commitment to its customers. You need to ensure you are ready to take advantage of what it will releasing; maximising the value of your investment and assessing when you can deploy the improvements in the future.

Of course, having a product roadmap is not the single factor by which CHOs stick with a product. Other factors such as current levels of functionality and support come into play. Are you frustrated with what you have? How well is your supplier performing? How well does it address your needs? What issues does it pose to your organisation?

An important question for you then is to determine whether to replace what you have and ensure you have the best system combined with a reliable supplier that will support your business needs for at least the next 5 – 10 years. Doing this requires you devote the required level of due diligence in evaluating products, assessing risk and determining whether it offers good value for money.

Alternatively, with the evolution of digital products operating in this market, rather than rely on your main system provider for everything, consideration can be given to procuring from specialist digital software suppliers.

An IT system is not an insignificant investment, so you need to ensure you have the right one.

3. Context

A key question is what constitutes an IT improvement? Before you can assess what improvements you need, or should even think about, you need to consider:

1. What you have in terms of systems and technology.
2. How you are using it.
3. How it is supporting you.

4. The impact your current systems are having in terms of their capability to support your operations.
5. The extent of issues you are encountering with what you are using.
6. Your faith in your current supplier.
7. Whether your systems supplier(s) have a defined roadmap for their product(s).

The term improvement means:

- the action of improving or being improved and / or
- the process of making something better or is better and / or
- a person or thing that represents an advance on another in excellence or achievement and / or
- a bringing into a more valuable or desirable condition

In terms of systems and technology, an important aspect is how to determine what is better than what you have now? You can only really identify this to an extent by identifying the issues, gaps strengths and weaknesses in relation to what you are using now.

A key question, therefore, is how you resolve these gaps and issues. You should therefore first undertake an information systems and technology assessment before even considering any IT improvements. This document should therefore be read in conjunction with ***01 Developing an IS / IT Strategy.pdf*** which was prepared for CHIA NSW and CHIA Vic as part of the digital transformation project.

In particular, you should use the Gap Analysis worksheet in ***02 IS/IT Strategy Toolkit.xlsx*** to set out your current state assessment to determine whether your current system(s) can sufficiently support your operations. This exercise should also be used to define your future requirements to inform ***where you need to be.***

A product or service weakness can be identified if something is not provided or supported which you would expect to be included as standard. This is relatively straight-forward to judge. Another way of looking at this is in relation to your business strategy: your organisation is intent on introducing a new service initiative but your current tools restrict you from implementing it either partially or fully.

In contrast, what is a strength? If a number of products provide the same thing which you would ***expect*** them to, is this a strength or is it just the norm? Of course, if you don't have access to it in your current product, but you know another supplier offers it then clearly, you would say that the other product has a clearly defined strength.

Alternatively, perhaps you don't know what other suppliers offer because you are only accustomed to what you are using. Possibly, you may not have really considered or identified any issues with your current system(s) and you may well be satisfied with what you have, but that could then imply that you don't know what you don't know.

If you have identified issues with your current system(s), you may not know what is the best way of improving the situation e.g.:

- procuring a new system or technology platform,
- enhancing it (if your supplier can or intends to) or
- just seeking advice or
- seeking guidance from your existing supplier

Taking the above into account, this therefore presents a challenge for this document in setting out system and technology improvements which some organisations may not necessarily be aware of but which others would consider to be standard or expected components of a product, platform, solution or service.

In view of this possibility, this document will accordingly focus on initiatives which have been introduced in the more recent past, (which some CHOs may be unaware of) as well as highlighting the emerging trends in the market and which may be of relevance to the CHO sector.

4. Assessing Options

In following the guidance provided in **02 Developing an IS / IT Strategy.pdf** and using the templates in **02 IS/IT Strategy Toolkit.xlsx**, you should have determined:

1. Where you need to be in terms of initiatives needed to support the business drivers.
2. Identified requirements to meet your needs
3. Assessed the capabilities of your systems and technology infrastructure to support them.

Furthermore, as set out in **01 Developing an IS / IT Strategy.pdf**, it is crucially important to align your IS / IT strategy to your business objectives. If your current infrastructure and systems are posing issues in supporting your current level of operations, it is highly likely that they will be incapable of supporting any future business initiatives.

Once a clear definition of what the CHO is aiming to achieve is set out, the next steps are to ensure your information and technology needs are fully understood and that you assess what is needed for these to support the business drivers.



In using the **Gap Analysis worksheet in IS / IT Strategy Toolkit.xlsx**, you may well identify a range of gaps and issues.

Based on what you have identified, you then need to assess your options. Important points to consider here are:

1. Have you identified what you need from this exercise?

2. If you have, what is your level of confidence in your suppliers' ability to continue developing and enhancing their products?
3. Do you know what their product roadmap is and what the delivery timescales are?
4. To what extent will the proposed improvements set out in the product roadmap benefit you?
5. Based on your current state assessment, and if you have identified a significant number of gaps and issues, what level of faith do you have that the product you are using will be able to support what you want to do in the future?
6. Can / will the product be upgraded sufficiently to meet the ongoing business needs and drivers?
7. Can you wait that long?
8. How does your supplier's product compare against others?
9. What resources does the supplier have to be able to continually invest in its product?
10. How well can the supplier compete against alternative offerings?
11. What is its market share?
12. What is its track record in winning business?
13. How many customers is it losing?
14. If it is losing customers, can you afford to stay with it?



An important point to bear in mind is if your supplier is failing to provide the agility to keep pace with the demands and needs of an evolving or growing housing organisation, this may be a cost and a risk liability which you need to address. If you have little faith in your supplier's ability now to keep their product in pace with your changing needs, it is doubtful whether any improvements being made may alter that view.

5. Housing Software Market

In considering the above options and as part of the exercise in assessing potential improvements, it is important to pause at this point and reflect on the types of software packages that are available, since what you are using now poses implications as to the types of improvements that can be made, once you know what you need.

Suppliers providing software products specifically developed or adapted for the community housing market can be divided into the following categories.

Note: some of the packages listed below may not necessarily be specifically relevant to some CHOs due to either their size or their scope of operations.

5.1 Package-based Housing Systems

Such systems have been developed to be packaged-based or commercial-off-the-shelf specifically for social housing organisations, typically (but not necessarily all of them) supporting the following areas of functionality:

1. Housing applications and lettings
2. Tenancy management
 - a. Tenancy creation
 - b. Tenancy amendment
 - c. Person details
 - d. Household details
3. Rent accounting
4. Rent arrears
5. Rent reviews
6. Rent calculation
7. Bond administration
8. Payment processing and payment split rules
9. Leasehold property management
10. Case management
11. Breach of tenancy (anti-social behaviour and complaints)
12. Periodic tenancy inspections
13. Tenant damage and charges
14. End of tenancy
15. Tenancy termination
16. Vacancy management
17. Property management:
 - a. Flexible hierarchy
 - b. Core property information e.g., type, construction, ownership, legal details
 - c. User-defined property attributes or components
 - d. Modifications
 - e. Risks
 - f. Hazards
 - g. Alerts
 - h. Property leasing
 - i. Fee for service
18. Repairs (day-to-day responsive maintenance)
19. Planned / cyclical maintenance
20. Condition surveys
21. Contractor management

In addition to the above, it should be noted that:

1. Some package-based suppliers (but not all) offer functionality to support comprehensive customer relationship management of all people and organisations held in their system including contact management.
2. In addition, some suppliers who focus solely or mainly on the social market also provide functionality within their product suite to support finance management including:
 - a. General ledger
 - b. Nominal ledger / accounts receivable
 - c. Accounts payable
 - d. Sales ledger
 - e. Fixed assets
3. Reporting capability is typically provided through one or more of the following options:
 - a. Purpose built standard and regulatory reports
 - b. Export facilities to Excel
 - c. In-built report generator allowing customers to define their own ad-hoc reports
 - d. Third-party report generator or business intelligence tool included as part of the overall product package
4. Such systems typically provide functionality to define and generate user-defined standard letters and statements.
5. Suppliers of these products tend to use their standard implementation methodology which may be of lesser complexity compared to ERP focussed products.

5.2 Enterprise Resource Planning

An ERP system is a fully integrated suite of configurable modules covering the following areas of functionality:

1. CRM
 - a. Typically configured to support core housing management operational functions
 - b. Supplier may have developed templates and / or set up functions within the CRM module to support housing management functions and processes
 - c. Manages all forms of contact (ingoing and outgoing) from people and organisations with whom the CHO interacts
2. Assets
 - a. Responsive repairs
 - b. Planned maintenance
 - c. Cyclical maintenance
 - d. Project development
 - e. Contract management
 - f. Construction
 - g. Job costing
 - h. Estimating
3. Supply Chain

- a. Supplier administration
- b. Purchasing
- c. Linkages to finance administration
4. Finance
 - a. General Ledger
 - b. Accounts Receivable (typically used for rent accounting)
 - c. Accounts Payable
 - d. Budgets
 - e. Fixed Assets
 - f. Project Accounting
5. Human Resources
 - a. Recruitment
 - b. Onboarding
 - c. Employee administration
 - d. Training
 - e. Professional development
 - f. Employment termination
6. Payroll
 - a. Pay and allowances
 - b. PAYG and deductions
 - c. Leave
 - d. Timesheets
 - e. Superannuation
 - f. Employee self-service
7. Reporting
 - a. Dashboards
 - b. In-built reporting function
8. Workflow
 - a. Automates business processes and provide extensive efficiencies.
 - b. Provides automatic notifications to staff advising of actions or tasks that need to be undertaken as part of a business process.
 - c. Provides a sequence of user-defined connected steps that will enable the CHO to map or configure the software according to its business processes.
 - d. Due to the flexibility provided by some workflow tools and dependent on the organisation's business processes, configuration can be extensive and complex, incurring significant implementation costs
9. Letters and statements
 - a. Such systems typically provide functionality to define and generate user-defined standard letters; statements and templates

In view of the flexibility and configuration capability, ERP suppliers typically provide these products across a range of industries i.e., they are NOT unique to community housing organisations.

Examples of such suppliers are TechnologyOne; MYOB Greentree

Due to the scale of the potential configuration and flexibility provided by the software, the implementation of these types of products can prove to be relatively complex, subject to the nature and scope of the customer's operations

Some suppliers will brand their solutions to convey that the product is specifically designed for the market or is suitable for use in the community housing sector.

5.3 Real Estate / Residential Property Management Products

Real estate and / or property management products are typically used by organisations managing privately rented properties such as real estate agencies; property management companies; private renting companies

Their main differences with social housing management systems are:

1. Trust account management
 - a. Day to day management of bank account and tenant payments
 - b. Maintenance invoices
 - c. Monies owed to owner
 - d. Fees (management, letting, sundries)
 - e. Annual owner statements setting out all income and expenditure
 2. Rent setting
 - a. Landlord has full control over the rent and can determine the amount to be charged
 3. Rent review process
 4. Breach of tenancy by landlord
 5. Maintenance
 - a. Typically, such systems only support basic responsive maintenance in terms of receiving a work request; obtaining quotes and issuing instructions to contractors
 - b. Planned and cyclical maintenance is not supported in depth
 - c. Contractor management and compliance is not covered
 6. Regulatory reporting
 - a. Extensive reporting sufficient to generate regulatory reports is not supported
 - b. Consideration needs to be given as to the field placeholders necessary to comply with State and Federal reporting
2. Whilst such systems can be (and are being used) by CHOs to varying degrees, the vast majority of organisations tend to use specifically designed tenancy management systems.
 3. When assessing real estate software products, CHOs should carefully examine how these products would align to their business operations.

5.4 Software Suppliers Community Housing Sector

The following software suppliers currently provide **integrated tenancy and asset management / maintenance systems** (some of which include finance management modules such as general ledger; accounts receivable; accounts payable; sales ledger; fixed assets) to the Australian social housing sector (note this includes State / Territory Government agencies and all types of CHOs, irrespective of their size and scope of operations).

The table below also includes suppliers of real estate solutions, known to be used by some CHOs.

Supplier	Product Type(s)
1. Civica	<ul style="list-style-type: none"> • Package-based housing management system
2. Console	<ul style="list-style-type: none"> • Real estate
3. EMS	<ul style="list-style-type: none"> • ERP adapted for the CHO sector
4. Geometry	<ul style="list-style-type: none"> • Package-based housing management system
5. MDB Consultants (suppliers of Chintaro)	<ul style="list-style-type: none"> • Package-based housing management system
6. MRI Software	<ul style="list-style-type: none"> • Package-based housing management system <ul style="list-style-type: none"> ○ MRI Housing • ERP <ul style="list-style-type: none"> ○ Greentree • Real estate solutions <ul style="list-style-type: none"> ○ MRI Living (formerly branded as Property Tree) ○ Palace
7. NEC Software Solutions	<ul style="list-style-type: none"> • Package-based housing management system
8. Property Me	<ul style="list-style-type: none"> • Real estate
9. SDM Housing	<ul style="list-style-type: none"> • Package-based housing management system <ul style="list-style-type: none"> ○ Includes finance modules as standard
10. TechnologyOne	<ul style="list-style-type: none"> • ERP
11. Zavanti	<ul style="list-style-type: none"> • Solution based on Microsoft Dynamics

As can be deduced from the above, a wide array of functionality is provided in many of the products being supplied to the CHO sector.

Key distinctions to be made are:

1. It is not **what** they provide but **how** they do it.
2. The extent of value-added functions provided in each product.
3. The new functions the product will include and by when.
4. The level and quality of ongoing support.

5. The level of local expertise in the company.

5.5 Best of Breed Suppliers

The following software suppliers currently provide **best-of-breed** products to the social housing sector.

In the IT industry, a best-of-breed product is commonly considered as being **the best system in its referenced niche or category**. Although it may perform specialised functions potentially better than an integrated system, this type of system is limited by its specialty area.

Organisations often purchase software from different suppliers in order to obtain the best-of-breed for each application area; for example, a human resources package from one supplier and an accounting / finance package from another.

Due to the nature of the products offered, these have been grouped by product category. Note the list below is not exhaustive and additional suppliers could be identified:

Product Category	Supplier(s)
1. Business intelligence	<ul style="list-style-type: none"> Alteryx Google Data Studio Microsoft PowerBI Qlik Tableau
2. Cashflow forecasting	<ul style="list-style-type: none"> Castaway
3. Case management	<ul style="list-style-type: none"> InfoXchange
4. Customer contact & enquiry management	<ul style="list-style-type: none"> Freshdesk
5. Document management	<ul style="list-style-type: none"> MFiles
6. Governance, risk, compliance and policy	<ul style="list-style-type: none"> Complispace
7. Financial forecasting	<ul style="list-style-type: none"> Calumo
8. Finance management	<ul style="list-style-type: none"> Magiq Microsoft Dynamics Business Central MYOB Quickbooks Xero
9. Incident and risk management	<ul style="list-style-type: none"> Folio Riskware
10. Intelligent online forms / digital workflow engine	<ul style="list-style-type: none"> Wild Dog Solutions
11. Maintenance management	<ul style="list-style-type: none"> Assetic Loc8

Product Category	Supplier(s)
	<ul style="list-style-type: none"> • Mex • PropertySafe Maintenance Manager
12. Property inspections	<ul style="list-style-type: none"> • Inspection Express • Property Inspection Manager
13. Strategic asset management planning	<ul style="list-style-type: none"> • Assetic • SPM Assets
14. Supply chain / treasury management	<ul style="list-style-type: none"> • Coupa

5.6 Fully Integrated vs. Best of Breed Products

Across many industries, organisations often purchase software from different suppliers in order to obtain the best-of-breed for each application area; for example, a human resources package from one supplier and an accounting package from another.

In the community housing sector, it is not uncommon for CHOs to be using a finance system and a human resource system separate to their housing management system.

The table in section 4 above does not include the plethora of suppliers providing asset; property; facilities and maintenance management products to other industries.

The vast majority of CHOs tend to use package-based housing management systems which include the functionality set out in section 4.1 above. It is however possible that a CHO may choose separate packages specifically to support tenancy management and another to support asset management / maintenance, although this is a rarity rather than the norm. Where this has occurred, the driver has typically been the limitations provided in the package-based housing management system related to asset management and / or maintenance.

Both fully integrated and best-of-breed options offer advantages and disadvantages. There is no right or wrong solution with either option, as the CHO needs to consider a range of factors (positives and negatives) which are set out below. A CHO therefore needs to determine what is best for its business by evaluating all potential products and assessing the benefits that can be identified:

Best-of-Breed Systems	
Positive Factors	
Functionality	<p>In theory, it is more likely that a best-of-breed product will meet more of the CHO's business requirements for specific business functions as it will have been designed for specific markets and / or operations.</p> <p>If, e.g., a separate asset and maintenance management is selected, such operations will be the focus of the supplier's expertise and therefore likely to be more functionally rich than that provided in integrated solutions.</p>
Implementation	<p>The supplier is likely to employ consultants with good knowledge of the product and the specific business function it is designed to support.</p>

Best-of-Breed Systems	
Positive Factors	
	The project is likely to offer the potential for an overall shorter implementation time compared to an integrated system as the scope will be less.
Support	Maintenance and upgrades of one product can be undertaken without jeopardising the other applications in use. Note implications on established interfaces may need to be considered in the event of upgrades – see below

Best-of-Breed Systems	
Negative Factors	
Change management	Staff who need to work on more than one of the packages will need to learn a number of completely different sets of instructions and the total amount of learning may be considerably more.
Contracts	Where best of breed systems are being used, the CHO will need to negotiate and maintain a range of licensing and support contracts.
Data	<p>If separate systems are being used for tenancy and asset management / maintenance, a decision will need to be made on which should serve as the source of truth.</p> <p>In view of continual tenancy changes through allocations and terminations, it is sensible for the tenancy management system to serve as the source of truth of all tenant and property data for social housing.</p> <p>This inevitably means that core data may need to be duplicated across the respective systems e.g.: property; tenancy and person records.</p>
Interfaces	<p>Careful thought needs to be given as to how the interfaces between applications will:</p> <ol style="list-style-type: none"> a. Support the required information flows b. Interact and operate in terms of frequency c. Support any updates to core data <p>The CHO will therefore need to consider and determine the interface points and information flows between the respective systems. This may also require supplier consultancy to advise on product functionality in order that decisions can be made on information flows which could result in unforeseen or unexpected cost.</p> <p>The cost and time in developing and testing interfaces will need to be factored into the overall project budget including</p> <ol style="list-style-type: none"> a. Supplier costs & time b. CHO costs & time <p>Testing in particular can be quite time consuming when undertaking end to end tests. Many suppliers provide standard application programming interfaces (APIs) as part of their product solutions to support the exchange of data with third party systems. In theory, the establishment and operation of interfaces to third-party</p>

Best-of-Breed Systems Negative Factors	
	<p>systems should not pose any significant or technical obstacles, however, you need to ensure they operate correctly and you can only verify this after testing.</p> <p>Technically, there are no reasons why interfaces should not be considered, however, additional consideration needs to be given to which is at fault in the event of an interface failing and how such an issue would be resolved. It is however, possible that the best of breed supplier may blame other products in the event of implementation issues arising such as project delays and the probable need to clarify how data will pass from one system to another.</p>
Licensing	<p>A best-of-breed procurement will result in an additional licensing and support agreement, which in turn poses implications as to how the agreement will be managed and the resulting overhead. See above re: contracts.</p>
Security	<p>Security functionality will differ across products.</p> <p>User security considerations in the best of breed system may require more assessment in terms of determining:</p> <ol style="list-style-type: none"> a. Staff needing to access data in respective software applications b. How the security functionality will control access in each product.
Support	<ol style="list-style-type: none"> a. Total cost of ownership may rise due to different supplier support charges. Increased overheads may arise in maintaining different best of breed applications as support costs may vary b. Implications on established interfaces may need to be considered in the event of upgrades being released and applied to respective systems. c. The following support implications and responsibilities need to be considered in the event of one side of the interface failing. <ol style="list-style-type: none"> i. How is responsibility determined? ii. Who deals with it? iii. How are conflicts resolved? iv. Possibility of one supplier blaming another v. Interfaced software is not integrated software d. Increased overheads may arise in maintaining different best of breed applications as support costs may vary. The total cost of ownership may rise due to different supplier support charges.

Integrated Systems Positive Factors	
Contracts	<p>With an integrated system, there will only be a need to negotiate and agree upon one licensing and support agreement.</p>
Functionality	<p>One main advantage of an integrated tenancy and asset management system is that, subject to the scope of integration, data is held once with no data duplication</p>

Integrated Systems Positive Factors	
	(NB in a procurement, this would need to be fully evaluated as the supplier may claim its product is fully integrated when this may not necessarily be the case).
Implementation	It should prove easier to estimate and manage the overall cost of one implementation project compared to the potential number of best of breed procurements.
Integration	<p>If an integrated tenancy and asset management system is used, this would minimise the matrix of the required interfaces.</p> <p>Most of the integrated tenancy and asset management system suppliers have standard APIs and interfaces in place with third-party finance systems for the exchange of finance related information.</p> <p>If a fully integrated system with finance functionality is used, this would provide a fully seamless user experience.</p>
Licensing	The licensing of an integrated system is <i>likely</i> to be less than the cost of licensing various best-of-breed applications
User interface	<p>A consistent user interface is provided across all modules of the integrated solution with the same look and feel.</p> <p>Subject to the scope of functionality provided in the integrated solution, such products potentially offer functionality capable of better supporting and streamlining information flows across the whole of the organisation (e.g.: tenant charges) or between departments (e.g., the invoice process between assets and finance).</p>
Security	<p>With an integrated tenancy and asset management system, security configuration applies across the entire system.</p> <p>Consideration still needs to be given of course to the security set up in an integrated system and who should access or see specific functions and screens.</p>
Reporting	With an integrated tenancy and asset management system (subject to the scope of the product) reports can potentially be generated more easily across the whole of the organisation with the report content combining data across business functions.
Support	<p>With an integrated tenancy and asset management system, the following need to be considered:</p> <ol style="list-style-type: none"> a. One supplier provides support b. System administration cost and overheads to the CHO are likely to be less than maintaining separate best of breed applications. <p>Depending on the service offered by the supplier (such as Platform-as-a-Service), this potentially offers operational advantages if a cloud solution is adopted as one supplier performs the upgrades, handles disaster recovery, provides customer support, performs the nightly backups, and manages data security.</p>

Integrated Systems	
Negative Factors	
Functionality	<p>With an integrated system, not all requirements may be fully supported resulting in the need to potentially compromise on functionality e.g.:</p> <ul style="list-style-type: none">• workarounds may need to be implemented and / or• business processes may need to be adapted to suit what the product offers and / or• the product's limitations may need (reluctantly) to be accepted in certain areas and / or• the supplier is requested to consider specific enhancements to address the issues.
Implementation	<p>Due to the likely scope of the product, this poses a huge change upon the organisation which will require thorough training of staff and careful project management to ensure a successful implementation</p>
Integration	<p>If an integrated tenancy and asset management system is used, this would minimise the matrix of the required interfaces.</p> <p>If a fully integrated system with finance functionality is used, this would provide a seamless, consistent user experience.</p>
Scope	<p>The larger the product, the more intensive it becomes for the supplier in maintaining, supporting and continuing to enhance it.</p> <p>One size does not necessarily fit all.</p> <p>Certain operational areas may merit the active consideration of procuring third-party products / apps due to their functionality and then integrating them.</p> <p>A good example is the use of digital apps as part of digital transformation. How confident are you that your main system supplier is capable of focusing on digital tools alongside all other aspects of the product's functionality? Can a specialist provider offer a better product and is more skilled at advising you on how to set it up effectively?</p>

6. Identifying System Improvements

Technology never stands still.

To remain competitive, most if not all suppliers will be continually enhancing their products. On this basis, what is set out below in this section, may well be considered the norm in x years' time.

This reinforces the challenge for this document in setting out system and technology improvements which some CHOs may not necessarily be aware of but which others would consider to be standard or expected components of a product, platform, solution or service.



It is important to remember that technology never stands still.

What may be deemed to be an improvement now may well be considered or *expected* to be a standard feature in the future.

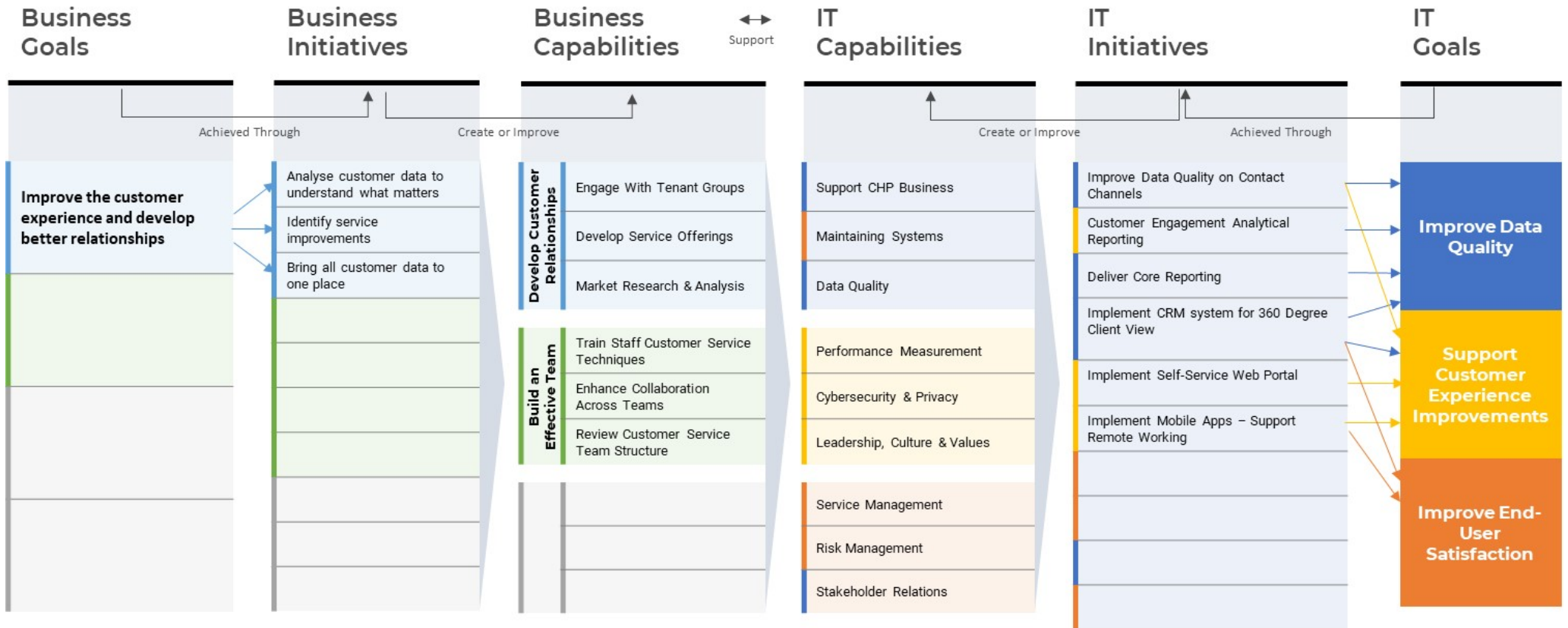
6.1 Identifying Needs

Identifying the scope for system improvements needs to be aligned to determining where you need to be as part of your strategic planning process and how such improvements need to support your business drivers.

Refer to section 4.3 in ***01 Developing an IS / IT Strategy.pdf*** which was prepared for CHIA NSW and CHIA Vic as part of the digital transformation project and use the Business Drivers worksheet in ***02 IS/IT Strategy Toolkit.xlsx*** to map out your business and IT capabilities for each defined business driver and initiative.

Use the framework in the template below to list out each business goal and the associated initiatives and capabilities. Inevitably there will be crossovers from each business driver to the IS / IT goals.

Digital Transformation
03 Assessing IT Improvements



The scope for your improvements may be driven by e.g.

1. Needing to give your Tenancy Managers more time with your customers.
2. Improving your service offering for your tenants (e.g., through improving existing services or delivery channels, or through new services or channels) as your needs and the needs of your tenants change.
3. Supporting better ways of working that reduce inefficiencies or costs (e.g., smoother customer communication, delivering business functions in a more integrated way, reducing duplication and manual effort, mobile working, reduced reliance on paper).
4. More timely and robust information flow that supports better work practices and decision making.
5. Having a core system that can grow and change with you as the work you do expands into other types of housing provision (e.g., you may be developing or applying for funding to launch new schemes for affordable housing).
6. Reducing operational risk and constraints and allowing ongoing enhancements in service delivery supported by the capabilities of an improved information system.
7. Supporting more integrated service delivery alongside other key agencies.
8. Providing for better connections with third party systems e.g., finance
9. Enabling you to take advantage of current and future technology

In the example above, the driver is to improve the customer experience, and your IT goal is to ensure your systems can support this with the initiative identified to implement a CRM system to achieve a 360-degree view of all your tenants and interested parties. This would have been identified after undertaking an assessment of your current systems and their capabilities in being able to support the organisation in improving the customer experience.

6.2 Implementing Improvements

To successfully implement any new system or enhanced new functionality, the CHO must be clear on whether its business processes are relevant to its operations and ensure these are fully documented. All current processes should therefore be reviewed and fully documented prior to procuring any new software product or implementing any new modules / functionality from your existing supplier.

As part of the implementation project, you will need to make business decisions on configuration and assess how to align your business processes to the best way to work using the package.

Alternatively, if the product provides functionality that supports processes currently not being utilised, this will very likely need to be considered, and which may pose implications on the time needed to make decisions on whether the functionality should be used.

A good example is use of schedule of rates, with most tenancy, asset management and maintenance systems providing this as standard. An important business decision then needs to be made in the system implementation project as to whether you utilise functionality such as this, and if so, what are the implications on your future operations.

The worst result is to replicate what is done now in a new system and not utilise functionality that potentially can deliver improvements.

Typically, if organisations have been relying on legacy systems for some time (or even relying on use of spreadsheets and manual workarounds), working practice will have evolved in relation to the system limitations being experienced. In other words, you can only do what your current system allows you to do.

The implementation of any new system therefore provides the opportunity to re-think current business processes and identify new ways of working through use of software that can generate efficiencies and support innovation.

Functionality which can prompt new or different ways of working and potentially generate efficiencies are set out below.

7. Suggested Software Functionality Improvements

This section does not intend to focus on specific aspects of the functionality items listed in section 4 as there inevitably will be variations in how each product supports each function.

Instead, it focuses on aspects of functionality which have gradually evolved over the last 5 – 10 years and which are available in some products being marketed to the community housing sector but not all.

These functions have been selected for inclusion in this document in view of the common pain points and issues that are often found when undertaking gap analysis exercises with CHOs using and continuing to use older legacy products.


7.1 Customer Relationship Management – 360 Degree View

Some suppliers provide customer relationship management functionality but not currently all. It is now increasingly important to have a 360-degree view of any person that you are dealing with or providing services to.

Systems with good customer relationship management can benefit your operations by helping you to centralise, optimise and streamline communications with your tenants, clients, applicants, household members, stakeholders, agencies and other third parties.

In particular, systems with this type of capability enable you to have or develop:

1. Better knowledge of your tenants, household members and applicants
2. Better segmentation
 - a. The ability to break down all persons and organisations that you deal with into categories and criteria, making it easier to create focused lists.
 - b. In turn, this allows you target particular groups for specific types of activities, community engagement being a good example. See below for further suggestions on this
3. Better knowledge of service satisfaction.
 - a. This is particularly important when assessing customer experience and digital transformation initiatives.



**The better you can
manage your
relationships, the higher
the customer satisfaction
with your level of service**

- b. Furthermore, such types of systems allow you to reach out to those tenants who you have not contacted for some time
4. Better anticipation of needs.
 - a. By analysing the types of contacts, you can glean a better understanding of your tenants' needs and concerns.
 - b. Furthermore, such analysis can enable you to assess how you can improve your level of service. The digital readiness survey provided in this digital transformation project purposely sought CHO views on this area
5. Better and faster communication
 - a. Not making your tenants wait by quickly replying to their requests is a sign of good, responsive, professional service
 - b. Setting up contact templates enables you to achieve this (see below)
 - c. Such systems also allow you to personalise your style of communication and automate replies
6. Better protection of data privacy
 - a. A CRM system can help you obtain and document your contacts' permission to store and use their personal details (consents), send automatic notifications to all new contacts informing that you would like to store their data, manage your tenants' email communication preferences, and even set up rules to update personal details for groups of contacts – all at one time

The following areas tend to be fully supported by CRM based systems.

1. A single view of the customer across all interactions i.e., tenancy; case management; maintenance; inspections; applications; allocations; tenant charges; support agencies; owners/landlords etc.
2. Display of customer information relative to the user's role in portlet style blocks on one screen through use of a dashboard of workflows and action items.
 - a. When logging in, Tenancy Managers may need to see information displayed in portlets, blocks, grids combined with good visuals covering e.g.:
 - i. Tenancies for their portfolio
 - ii. Properties in their portfolio
 - iii. Rent and non-rent balances
 - iv. Rent arrears by days / weeks in arrears with amount owed
 - v. Status of rent review cases
 - vi. Most recent contacts and nature of contact
 - vii. Breach of tenancy cases / tenant disputes by status
 - viii. Vacant property by status and event target dates
 - ix. Work requests by status
 - x. Work orders by status
 - xi. Applicant details
 - b. A Property Manager may need to view information on:

- i. Properties managed
 - ii. Tenancies (for contact details; name; addresses)
 - iii. Work requests pending
 - iv. Work order status
 - v. Invoice status
 - vi. Planned / cyclical work
3. Ability to search on contacts and view all activity / services provided to that person from one screen and link to relevant screens via a drill down for more detailed information.
4. Ability to hold the relationship of the client e.g., tenant, support agency, private owner, contractor, non-tenant etc. A client may also have multiple relationships e.g.
 - a. A support agency will be linked with a number of clients / tenants
 - b. A tenant may be in receipt of a number of support services from different agencies
 - c. The tenant may be a member of a consultative group involved in community development activities
5. Ability to hold the relationship of the client to other parties:
 - a. Emergency contacts (holding name of contact; email; phone numbers and relationship to the client)
 - b. Next of kin (holding name of contact; email; phone numbers and relationship to the client)
 - c. Long-term relationships the client or person may have with other individuals that you may need to make contact with
6. Ability to hold information on a customer's preferred language for written and oral communications; and allow this field to be used to select language-specific versions of standard letters, or to allow use of multi-lingual staff or interpreters when appropriate. Note suggested improvements below for document management.
7. Ability to hold a central source of all organisations across the full spectrum of your operations. This is important if your CHO deals with representatives of many organisations and a full contact history is required.
8. Ability to link the organisation contact to the tenant / property record in relation to the contacts made where the agency has had any type of contact / involvement which shows:
 - a. Against the organisation contact, the tenant / applicant / property where an involvement has been occurred
 - b. At the tenant / applicant / property record, the name of the organisational contact and the name of the agency where contact is either in progress or completed
9. Ability to hold user-definable client profile details, e.g., socio-cultural, demographic, disability, living situation, income, health and emergency contact, ensuring fields can be made mandatory as necessary. Such information should be held against each person record.
10. Ability to map and develop relationships between residents e.g., a tenant has no relatives but is part of a support network; has support needs and is part of a community group. Link the tenant to the related group(s) and be able to query back the group to view the tenants /

residents linked to that group. This also has a bearing on community development activities in identifying and planning future events.

11. Ability to allow a user to carry out client profiling (e.g., "special needs" clients, single parent households etc) to enable you to support the needs of specific client groups across your sphere of operations.
12. Ability to record if a person is deemed to be or has been classed as being at risk or to be a risk to staff.
 - a. It is distinctly possible that more than one instance of risk may exist against a person. User-defined risk categories should therefore be recorded and selected from a list of values.
 - b. This information should be displayed across all modules where there is interaction with a client.
 - c. Multiple risk categories should also be capable of being held.
13. Generate analytical reports enabling you to gain a perspective as to what is happening in your community, your portfolio and the people who live there based on the demographic information that is held on all residents (tenants; private tenants and owner occupiers).

7.2 Communication Channels

As noted above, contact management is integral to customer relationship management.

Contact management needs to be as flexible, versatile and as intuitive as possible in enabling you to receive and process enquiries as well as processing service requests.

Note also the scope for suggested improvements below relating to digital transformation.

CRM systems should enable you to:

1. Record multiple contacts with individuals; groups and organisations on a one-to-many basis. This includes various contact methods (telephone, letters, meetings) and contact reasons (feedback, enquiries, appeals).
2. Handle, manage, keep record of and monitor inbound and outbound communications from and to customers in relation to service enquiries; maintenance/faults reporting and for the overall co-ordination service-related activities.
3. Record a preferred communication/contact method for a customer which is automatically applied to subsequent interactions. Note this is particularly important when assessing the implementation of digital initiatives.
4. Automatically record correspondence sent to a client irrespective of the module from where the correspondence is generated to ensure a contact management history can be maintained and held against each person or organisation (i.e., the "contact").
5. Generate notifications and acknowledgements using an array of contact digital channels e.g., notifying a tenant when arrears have reached a certain limit; notifying a tenant of an inspection date / reminder etc; notifying tenant of a repair appointment; acknowledging receipt of payment etc
6. Allow the user to see a consolidated view of all correspondence issued to or contact with a tenant, client, applicant, household member.

7.3 Document Management

Document management is a common pain point in many CHOs using older legacy systems.

Typically, issues are found in the user manually needing to locate a document or file held in another system, amending the document if needed and, when sent, the document is not held against the tenancy record, instead being held again on a separate server.

The management of photographic records is also another classic example of the frustrations users encounter. Transferring photographs from e.g., inspections captured on a smartphone is likely to be frustratingly time consuming.

Documents, photographs and other files are typically held against tenant and property records in the form of a link to a client folder and not directly against the record itself. The legacy system may use hyperlinks stored against entities to link documents, pictures, folders, web locations, emails etc. This means the user has to upload to the server and then assign to the particular folder for that record.

The population of specific documents with data held in the system is likely to be a time-consuming and manual process. Electronic document management should be robust, with an easy to manage structure that allows for increased business continuity resulting in an overall reduction in the use of paper-based documents and forms.

Key improvements that should be sought are therefore:

1. Allow information from the database to be inserted in letters as required, so that letters are pre-populated with information e.g., name, address, inspection date etc. Merge data fields extracted from across all modules (as relevant) into correspondence as set up in the individual template or pre-printed forms, e.g.
 - a. Tenancy Agreements (will include property, customer, tenancy information).
 - b. Rent and payment letters (will include customer, tenancy, rent and transaction information).
2. Facility to define calculations or run-time values for each letter e.g., look ups from fields; date calculations
3. Allow the user to view and amend (if applicable) documents (correspondence & forms) prior to printing, with amendments saved to the system.
4. Automatically assign the letter to a client or property record, irrespective of the module where the letter is initially generated i.e., the system should pose no constraints on how or where the letter is generated from.
 - a. This is important to ensure that there is an overall view of ALL outgoing correspondence relating to a client, person, tenant, property, contractor, supplier or support agency
5. Ensure that all documents sent to or are received from a person; client; tenant; contractor; third-party etc remain with that record.
6. Ensure that all documents are easily accessible from each related record and that users can clearly identify the type of document related to the record
7. Allow a signature (image file) to be inserted into bulk letters, linked to the indicated signatory (e.g., a tenancy manager)
8. Support the administration of digital signatures

9. Generate mailing lists
10. Support delivery of standard letters via email (as PDF and / or inline emails), with emails stored in the same document system
11. Support delivery of SMS messages, with SMS messages stored in the same document system
12. Hold photographs and other files directly against the related tenancy or property record
13. Allow users to search for letters / files by subject and type
14. As and when a client becomes a tenant, retain all documentation sent to that person, ensuring that if the person moves, the documentation remains accessible for that person irrespective of status.
15. Ensure that all documents are easily accessible from each related record and that users can clearly identify the type of document related to the record
16. Allow photographs; video files; MS Office documents together with documents to be scanned or imported and then attached to all types of records in the system, e.g., properties; tenancies; leases; applicants; household members; support agencies; work orders; inspections; invoices.
17. Attach emails / invoices to account records

7.4 Mobile

In many industries, use of mobile technology is now the norm. Some of the suppliers included in this document provide mobile aware software i.e., the software is accessible on any mobile device regardless of screen resolution or specific mobile apps. It is however notable that the vast majority of CHOs do not yet have access to or use mobile technology in any real depth, although this is on the implementation roadmap for some CHOs. Older legacy systems do not support mobile apps and rely on third party best of breed suppliers for specific functions, which is dependent on an interface.

Mobile working offers a tremendous opportunity to introduce many service efficiencies and improvements however the lack of mobile functionality can provide a huge gap for CHO staff and is likely to be a source of much frustration in view of the impact on:

1. Data duplication i.e., manually recording notes and then entering data into the system being used once back in the office
2. Manual data capture
3. Needing accurate and current information when on-site

CHOs who do not use a supplier which offers mobile functionality should be considering alternative systems which provide the capability to:

1. Support mobile working across a range of services, providing a user interface relevant to the device (smartphone; tablet) being used.
2. Provide mobile technology that will continue to work when connections are lost - (noting with last downloaded data)
3. Provide staff panic alarm back to base for immediate assistance
4. Enable tenancy staff to have access to and update information using a mobile device covering:
 - a. Core tenancy information
 - b. Rent and non-rent accounts including a full transaction history

- c. Arrears including the ability to record notes of discussions with the tenant on-site
 - d. Arrangements including the ability to create payment plans to clear debt
 - e. Tenant charges with ability to record consent to pay; log types of damage and raise work tasks
 - f. Casework including the ability to record case notes and outcomes
 - g. Anti-social behaviour / complaints including the ability to record case notes and outcomes
 - h. Tenant contact details
 - i. Previously completed work at the property
 - j. Work outstanding at the property
 - k. Future planned work at the property
 - l. Any work for an associated complex or building
5. Support streamlined raising of common maintenance jobs, e.g., if a smoke alarm is noted as faulty, allow one-click raising of the required maintenance jobs
 6. Support mobile working for asset inspections, recording condition, hazards and risks
 7. Support mobile working for viewing and completing in-going and out-going inspections
 8. Support capture of visit status on site, e.g., tenant not home; re-sched to other date / time
 9. Support maintaining mobile-native versions of forms, e.g., version of a form that works well whether completed on desktop, paper, tablet or phone; consistent information with layout presented well on each device / format
 10. Allow tenant confirmation to be captured on device / forms, e.g., signature on a damage form or request for service or agreement for support agency
 11. Allow photos to be taken during site visits and attached, with commentary, to the appropriate record within the visit screen or maintenance request screen
 12. Records including photos created during mobile working are to be automatically time / date stamped, in a way that allows searching /reporting by date / time
 13. Be able to display a tenancy summary on the mobile device (refer also section 4 Tenancy management)
 14. Support providing information to the tenant from on-site, e.g., email of rent statement, copy of maintenance request that was raised
 15. Support face to face video calls from tenants, e.g., allow for tenant to show their tenancy manager or maintenance team member an issue with their home
 16. Provide ability for Admin User to lock, force log-out, deactivate or wipe a mobile device, e.g., if a device is stolen or left in a home.

7.5 Workflow / Task Management

Until comparatively recently, the onus was on the user to retrieve information from a system based on what they **thought** they had to do or where they needed to **remember** to do something or to **check** on whether something had been done or whether it was overdue.

A growing number of suppliers now offer (or are intending to offer) workflow / task management functionality to:

1. Display tasks that need to be done.
2. Guide users through a series of steps in a process.
3. Automatically seek approvals for a specific action for team leaders / managers
4. Automate task notification (which may be displayed on-screen within the system to offset any need to generate emails with the risk that a user's inbox becomes bombarded with tasks of things to do)
5. Display overdue tasks
6. Re-allocate work in the event of leave or sickness
7. Re-allocated work based on employee workload

Every CHO wants to make their processes as efficient as possible. You can spend countless hours assessing how to make a process better, and finally, you may find a solution. Implementing the improvement, though, can sometimes be hard as staff will be accustomed to what they are doing on the basis this is how they have always done it.

One of the main challenges you'll face is actually getting everyone to follow-through with the changes. Change management is therefore an important factor to consider. If replacing your legacy system with a product which provides workflow functionality, you may wish or need to consider first bedding in the new system before implementing any new workflows. Staff will be used to the old process and change management may well present its challenges. Some staff are used to what they know and they may not change their working approach or habits straight away.

Workflow software is a tool that automates the flow of work in a process and should be used as a way of guiding staff through a process. A workflow is a series of tasks needed to be carried out in a certain order by different staff members in order to complete a business process. Workflow management software also helps in reducing the manual efforts involved and in automating a range of tasks. Some of the most widely-used workflows in a CHO could include:

1. Onboarding a new tenant.
2. Document approvals.
3. Arrears escalation and action generation.
4. Processing a work request to a work order, approving and processing invoices
5. Processing write-offs
6. Processing account adjustments and seeking approvals.
7. Administering tenancy incidents such as anti-social behaviour which may progress to breach of duty where senior manager approval may be required.
8. Scheduling rent reviews and inspections

All workflow management software makes use of a workflow engine, which helps in creating and modifying the different tasks in the system. It provides a well-planned, structured and centralised approach for managing business processes, and can help in reducing the resources involved in the process. It is capable of increasing parallel run tasks, unlike with a manual process.

Workflow management software reduces the time needed for transferring pending work between tasks and allows for continual tracking and notification. It also greatly reduces the costs associated with documentation involving paper and manual interventions.

It *should* not be difficult to implement, and it can allow business processes to continue without major modifications in the application. Having said that, configuring workflow is likely to require good knowledge of the system configuration as well as an understanding of what this entails. Some suppliers may therefore discourage you from making many changes without their input or oversight. In short, you need to know what you are doing. Workflow offers the scope to:

1. Introduce continuous business improvements
2. Streamline and simplify business processes
3. Ensure how tasks can be easily managed
4. Provide good process control.

Such software can help to improve customer service as well as:

1. Ensuring consistency in how staff undertake tasks.
2. Allowing greater predictability in customer response levels.
3. Providing more flexibility to meet business needs.

It is important to be aware that workflow provides the opportunity to re-evaluate what you have always done and assess how you can improve what you do.

In assessing how workflow can assist in improving CHO operations, you should be assessing software which is capable of:

1. Allowing workflows to be configured to pro-actively manage client interactions and your business processes.
2. Providing a sequence of user-defined connected steps that will enable you to map or configure the software according to your business processes.
3. Supporting the definition of different workflows for different types of work or roles
4. Allowing for allocation of workflow tasks to users, roles or teams, recording the username against each workflow event.
5. Automatically generating notifications or alerting the users assigned to the workflow as to the task(s) that need to be undertaken via dashboards, or an activity listing and / or within the body of the screen provided for the business function.
6. Allowing for controls to be placed on the allocation of tasks to support / restrict its use to specified users and / or roles
7. Being able to escalate / reallocate actions in a workflow if not met within a specified timeframe.
8. Allowing escalation paths and timeframes to be configurable such that managers are automatically notified or alerted of tasks that have not been completed through a task related screen of overdue tasks
9. Providing a facility such that the task is displayed clearly and that the user can easily identify the type of action that needs to be undertaken and by when, and then access the appropriate screen or task that needs to be completed

10. Updating dashboards or alternative screens as appropriate upon completion of the tasks, and ensuring that the individuals responsible for the next task are automatically notified or made aware such that relevant data is displayed in order that they are able to execute the next stage of the process
11. Taking into account a user / team current workload when allocating tasks, thereby allowing a balance of the workload between individuals, e.g., when a user is on leave so that work is re-directed
12. Allowing users to view current actions/activities assigned to them in dashboards set up for specific business functions and sort them by due date, action type.
13. Triggering and automatically logging correspondence by set criteria (completion of workflow event) and generate in bulk (if required).

7.6 Community Engagement

For those CHOs registered under the National Regulatory System for Community Housing, community engagement is a required performance outcome. The CHO must work in partnership with relevant organisations to promote community housing and to contribute to socially inclusive communities.

With traditional legacy and some package-based systems, extracting data to show the level of community engagement activities is likely to have posed its challenges.

A CRM based system however would provide advantages in its ability to:

1. Set up partnerships with organisations having an interest in or providing services to the community
2. Record contacts with each organisation
3. Set up consultative groups
4. Assign tenants and residents to the consultative group
5. Establish and record governance of the group
6. Record frequency of meetings
7. Set up campaigns for a specific initiative or topic
8. Set up events for relating to a community initiative
9. Invite residents to the event
10. Record the outcome of the event
11. Record any funding granted to support the initiative
12. Generate literature or leaflets for issue to groups or the wider community
13. Set up measures to record well-being
14. Record outcomes and feedback to consultation undertaken and surveys (see also suggested improvements below relating to self-service portals)
15. Analyse outcomes and feedback to gauge the success of specific types of community engagement activities

In terms of well-being, recording and measuring social impact outcomes will help make decisions about how to design and deliver services based on the needs and experiences of tenants.

Measures are ways of knowing that a change has occurred. They provide evidence about the extent to which tenants experience the outcomes. Each outcome has corresponding measure/s.

Defining measures in such a way will enable outcomes to be identified which describe the desired state of social impact or security for tenants that housing contributes to, sometimes directly and in others indirectly.

Outcomes could be e.g.:

Measure	Suggested Factors
1. Stability	Housing is affordable; options are secure; situations are being sustained
2. Financial	Tenants are able to manage their financial situation. This can be measured by responses such as: <ul style="list-style-type: none"> • I am regularly meeting financial obligations • I am neither increasing my debt nor saving • I am getting more into debt
3. Suitability	Housing meets tenant needs and preferences. This can be measured by responses such as: <ul style="list-style-type: none"> • I have access to services and opportunities that are important • My home has the features that I need • I have a say in decisions about my housing
4. Safety	Tenants feel safe in their home and in their community
5. Health	Tenants feel physically, mentally and emotionally healthy
6. Participation	Tenants participate in learning or are volunteering in activities and or services
7. Connections	Families feel connected to the community; can associate with the culture of the CHO
8. Empowerment	Tenants feel motivated and hopeful for the future; tenants feel they have control of their own situations

8. Digital Initiatives

When exploring digital transformation initiatives there are a number of improvements that should be evaluated. Further consideration is given to digital solutions as part of the process in preparing a digital strategy, which is included in the CHIA NSW and CHIA Vic Digital Transformation Toolkit. The sections below indicate the types of digital technology solutions that should be explored.

As stated in other documents in the Digital Transformation Toolkit, it must be emphasised that digital transformation is not just about technology. For CHOs, digital transformation is defined as:

“The integration of digital technology into all areas of CHO operations, fundamentally changing how the organisation can operate, delivering increased accessibility to tenants through the introduction of additional service channels and providing an enhanced customer experience.”

Digital transformation is about a readiness to innovate, deal with cultural change and create new services and / or initiative to cope with the current and emerging plethora of challenges facing CHOs today. The use of technology should be viewed in terms of how it can serve as the foundation for a complete rethink of how, why, when and where CHOs operate; deliver their services and how tenants can best access these services.

For this reason, it is important that a digital strategy is prepared separately to the IS / IT strategy in view of its likely breadth and scope, however, it will need to make references where appropriate to specific initiatives set out in the overall IS / IT strategy.

The suggested improvements set out below should therefore be seen in this context.

8.1 Supplier / Contractor Portals

Some, but not all, of the mainstream housing system suppliers now offer supplier portals as an integral part of their solutions.

A good example is the repair ordering process. With older legacy type systems, the user is typically required to either email the work order template directly to the contractor or possibly still print, save as a pdf document and then attach to an email. Years ago, this process relied on the user printing the work order template and sending it by post or fax, or by phone with the printed version being sent in the post afterwards.

With some of the systems now available, once a work order is issued (and where necessary, authorised due to the value of the work), the order automatically appears in the contractor portal thereby negating the need to email it.

The contractor then manages the work through the portal, and may either submit a variation request or log its completion and then submit the invoice to the CHO. Everything is therefore undertaken electronically with the variation; work completion and invoice all automatically displayed in the CHO's maintenance system.

Likewise, a supplier portal may be used for other types of supply, such as finance services.

When assessing alternative systems, (on the basis that your current system does not provide a contractor supplier portal, it is recommended you should be seeking the ability to

1. Allow users to issue work orders or purchase orders to maintenance contractors / suppliers
2. Allow contractors / suppliers to view all work / purchase orders issued using the portal
3. Allow contractors to submit information through the portal covering the following activities:
 - a. Provide notifications when work is complete
 - b. Allow contractors to have access to enter details of completed work.
 - c. Request work variations

- d. Submit invoices
4. Upon contractors entering information either through the portal, generate appropriate workflow notifications to relevant staff, setting out:
 - a. Any tasks to be performed or
 - b. Display such information in a dashboard grid format, such that the user may easily identify updates and current status.
5. Support ongoing communication through the portal, e.g., the contractor may have submitted a variation request which needs to be approved by the CHO with the approval communication being logged in the portal

8.2 Self-Service Portals

A number of the mainstream housing system suppliers now offer customer portals as an integral part of their solutions.

One size does not necessarily fit all, so it is important that CHOs consider all types of solutions and not just the mainstream suppliers operating in the sector. CHOs should therefore assess the merits of portal solutions developed and offered by specialist digital product suppliers

A self-service portal is an additional channel by which a tenant can either make an enquiry online or submit a service request to the CHO. Portals should be device agnostic such that the enquiry or request can be made on any type of device such as a smartphone, tablet, laptop or through facilities provided in community access points such as libraries etc.

A good, well designed self-service portal offers the potential to reduce the demands on your front-line staff. The Case Studies document provided in the CHIA NSW and CHIA Vic Digital Transformation Toolkit include examples of how other organisations have deployed self-service portals. Lessons learnt from these case studies show that implementing a portal alone is not sufficient as a solution. Other important factors to consider are:

1. Integration to the back-office system, how data flows and how staff are aware of the request being made through the portal.
2. Intelligent rules set up to guide tenants through specific types of processes or applications e.g., if using an on-line form, the form should be designed such that if answer to question 'x' is yes, got to section 'a', if answer is no, go to section 'b' etc.
3. Collaboration across CHO teams, breaking down silo-based ways of traditional working.
4. Establishing a seamless customer experience.

Aspects to consider when assessing portal-based functionality are:

1. Allow clients to view and update their details over the Internet (defined allowable fields only).
2. Allow the following service access facilities in order for clients to request or process the following over the Internet:
 - a. Unique client login facilities
 - b. Rent account enquiry
 - c. Print rent / non-rent statement
 - d. Support the tenancy sign-up electronically and remotely

- e. Lodge enquiry / complaint / contact
 - f. Report potential breaches of tenancy / nuisance
 - g. Log a Repair Request
 - h. Check maintenance history
 - i. Lodge a complaint relating to the level of service.
 - j. Enable tenants to respond to quality of repair surveys.
 - k. Enable tenants to respond to consultation requests and initiatives as part of community engagement activities.
3. Provide sufficient levels of security in order for tenants to access services over the Internet.
 4. Provide an online client area for tenants to view the current position of service requests. This area should provide facilities where tenants are able to undertake the following:
 - a. View the status of the service request that has previously been submitted
 - b. View completed forms
 - c. Search / view all available Uniting forms
 - d. Search / view all forms submitted

8.3 Digital Workflow Engine

It's all very well having a self-service portal, but a key aspect is how information gets back to the person submitting the service request:

- What happens to a request when it is made through a portal?
- How are staff made aware or prompted to do something with the request and to respond to the person submitting it?
- How does the tenant know what the status is?

Think on-line parcel tracking for social housing. When you order something online from a supplier, you are typically kept informed as to what is happening to your order. Likewise, the same concept needs to apply to any service request submitted through a portal. What is happening with it and who is dealing with it?

Some of the mainstream suppliers to the CHO sector are beginning to provide this but so far, not all.

Aspects to consider when assessing portal-based functionality are:

1. Provide a digital workflow engine to allow you to set up stages for all self-service request, e.g., for an application for a service, such as request for a refund, the steps might be:
 - a. Receive, verify and reviewing the form,
 - b. Checking any evidence and
 - c. Making a decision, which in turn can be seen by tenants to track the progress of their request.
 - d. Feeding the verified information into the remainder of the workflow
2. Integrate the digital workflow engine with tasks generated in the back-office tenancy management system; summarise this information in order that the current status of the logged service request is displayed in the online client area.

3. Enable staff to request information back from the client, which is instantly available in the client's online account meaning staff could technically remove paper-based requests for information entirely across a wide range of services (for tenants that want to interact this way).
4. Provide a service view such that staff can view all types of enquiries being submitted by tenants and through the self-service portal.

8.4 Chatbots

Chatbots may be considered frustrating for some, removing the human interaction however they can be used as the first point of contact to initially offer advice or point people in the direction they need to head to get the information they want. This could be for example, general information about applying for certain types of services and needing guidance on what to do and what to complete first, such as eligibility rules; specific types of assistance etc.

Chatbots are defined as being a computer program designed to simulate conversation with human users, especially over the Internet.

Chatbots can be as simple as rudimentary programs that answer a simple query with a single-line response, or as sophisticated as digital assistants that learn and evolve to deliver increasing levels of personalization as they gather and process information.

Potentially, they can:

1. Boost operational efficiency and bring cost savings to businesses while offering convenience and added services.
2. Allow CHOs to easily resolve many types of customer queries and issues while reducing the need for human interaction.

Chatbots are driven by AI, automated rules, natural-language processing (NLP) and machine learning (ML) to deliver responses to requests of all kinds.

There are two main types of chatbots:

1. Task-oriented (declarative) chatbots
 - a. These are currently the most commonly used chatbots and are single-purpose programs that focus on performing one function.
 - b. Using rules, NLP, and very little ML, they generate automated but conversational responses to user inquiries.
 - c. Interactions with these chatbots are highly specific and structured and are most applicable to support and service functions—think robust, interactive FAQs.
 - d. Task-oriented chatbots can handle common questions, such as queries about hours of business or simple transactions that don't involve a variety of variables.
 - e. Though they do use NLP so end users can experience them in a conversational way, their capabilities are fairly basic.
2. Data-driven and predictive (conversational) chatbots
 - a. These are often referred to as virtual assistants or digital assistants
 - b. They are much more sophisticated, interactive, and personalized than task-oriented chatbots.

- c. These chatbots are contextually aware and leverage natural-language understanding (NLU), NLP, and ML to learn as they go.
 - d. They apply predictive intelligence and analytics to enable personalization based on user profiles and past user behaviour.
 - e. Digital assistants can learn a user's preferences over time, provide recommendations, and even anticipate needs.
 - f. In addition to monitoring data and intent, they can initiate conversations.
 - g. Apple's Siri and Amazon's Alexa are examples of consumer-oriented, data-driven, predictive chatbots.
3. Advanced digital assistants are also able to connect several single-purpose chatbots under one umbrella, pull disparate information from each of them, and then combine this information to perform a task while still maintaining context—so the chatbot doesn't become "confused."

At least one of the mainstream suppliers is in the process of developing chatbot functionality, however, as noted above, CHOs could also wish to consider specialist chatbot suppliers to implement a tailor-made solution and integrate it with the back-office system being used.

Chatbots are starting to become used by UK housing associations, one of which was featured in the Case Studies document referenced above. For further information, see <https://futr.ai/housing/>

8.5 Smart Sensors / Internet of Things

With the ongoing growth of cloud-based systems (see below), embedding technology in homes to make them safer and healthier is no longer beyond the realms of possibility.

The Internet of Things (IoT) is becoming increasingly commonplace and the technology provides significant opportunities for CHOs over the next 5 – 10 years. IoT is defined as "the interconnection via the internet of computing devices embedded in everyday objects, enabling them to send and receive data."

An IoT ecosystem consists of web-enabled smart devices that use embedded systems, such as processors, sensors and communication hardware, to collect, send and act on data they acquire from their environments. IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analysed or analysed locally. Sometimes, these devices communicate with other related devices and act on the information they get from one another. The devices do most of the work without human intervention, although people can interact with the devices -- for instance, to set them up, give them instructions or access the data.⁴

The Case Studies provided in the CHIA NSW and CHIA Vic Digital Transformation Toolkit features a good example of how one UK housing association has worked in partnership with 2 local authorities to provide sensors in homes to discreetly monitor activity patterns and receive alerts to changes in daily patterns that could indicate a fall or illness. Simply placed on a kitchen shelf, the DORIS (Data-Orientated Responsive Intervention System) care sensor automatically relays insights and triggers alerts, without any user interaction.

⁴ <https://www.techtarget.com/iotagenda/definition/Internet-of-Things-IoT>

Another good example is Barnet Homes in the UK, working in partnership with Aico. As of November 2021, Barnet Homes has over 3,000 properties connected to the Aico-HomeLink IoT platform, accounting for 20 per cent of its total housing stock. The technology has demonstrably saved people's lives and generated net savings. Following a smooth roll-out, Barnet Homes intends to complete a full roll-out of 15,000 homes by 2025. For every £1 invested, it was estimated that at least £2.70 will be saved. A comprehensive business case identified cashable savings of £8.9m.⁵

Similarly, other types of sensors can be installed to monitor e.g.:

- Smoke alarms
- Carbon monoxide detectors
- Smart meters
- Emergency lighting
- Telecare
- Ventilation
- Fire door sensors
- Environmental sensors

In each instance, the main housing / maintenance system needs to be prompted when servicing is needed as part of a cyclical maintenance programme or when an item fails.

Building and asset information management is one of the main reasons for IoT deployment. Your main asset information system will need to be capable of analysing IoT derived data and work with third-party manufacturers which develop IoT sensors and devices.

Security is obviously a key consideration as to how such data is stored, accessed and used.

Some of the cloud-based system suppliers operating in the CHO sector are already enhancing their systems to cater for IoT deployment and smart monitoring via integration with IoT devices. One important aspect to investigate is the analytical capabilities provided by the IoT supplier, as this could result in needing to use different systems for each type of device. In such cases, exploration of integration options would need to be assessed. It is anticipated that this area will evolve further in the coming years.

Sufficient due diligence would of course be needed in assessing the support capabilities of IoT device manufacturers and suppliers.

8.6 Predictive Analytics

Most CHOs use a reporting tool of some sort. This may be a third-party business intelligence tool or some may be reliant on Microsoft Excel.

Business intelligence tools report on what has happened and are used to compile data on key performance indicators. BI is typically used to generate tailored reports and provide reliable insights on performance (assuming the quality of your data is reliable).

Predictive analytics determines the likelihood of future outcomes using techniques like data mining, statistics, data modelling, artificial intelligence, and machine learning.

⁵ <https://www.aico.co.uk/publication/case-study-barnet-homes/>

Predictive analytics interprets a CHO's historical data to make predictions about the future. Today's predictive analytics techniques can discover patterns in the data to identify upcoming risks and opportunities for an organization.

Predictive analytics allows organizations to be more proactive in the way they do business, detecting trends to guide informed decision-making. With the predictive models, CHOs no longer have to rely on educated guesses because forecasts provide additional insight.

Good examples of using predictive analytics are:

1. Arrears management.
 - a. Based on a tenant's payment history; the frequency of payment transactions; the number in the household; their income; employment and their debt history, predictive analytics could be used to forecast the likelihood of rent arrears occurring.
 - b. Such data could be used to pro-actively engage with the tenant to check on their circumstances and thereby reduce the possibilities of a debt situation occurring.
2. Maintenance requests
 - a. Analysis could be undertaken based on the frequency of various or common types of work requests being made by tenants.
 - b. Is the problem due to the component type; its failure rate; what is the likelihood of such instances continuing etc?
 - c. Such data could be used to prepare future planned or cyclical maintenance programmes

At least one mainstream housing systems supplier is developing predictive analytical reporting capability.

9. Technology Improvements

9.1 Cloud Computing

Across many industries, cloud computing has become mainstream, with major players AWS (Amazon Web Services), Microsoft Azure and Google Cloud Platform dominating the market. The adoption of cloud computing is still growing, as more and more businesses migrate to a cloud solution.

There are various interpretations as to what cloud computing is and what it isn't. In simplistic terms, cloud computing is the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet ("the cloud") to offer faster innovation, flexible resources, and economies of scale.⁶

Others say it falls into three discreet categories:

1. Infrastructure-as-a-Service (IaaS)
 - a. A third-party provider hosts infrastructure components, such as servers and storage, as well as a virtualization layer.

⁶ <https://azure.microsoft.com/en-us/overview/what-is-cloud-computing/#uses>

- b. The IaaS provider offers virtualized computing resources, such as virtual machines, over the internet or through dedicated connections
 - c. In IaaS, organisations rent the IT infrastructure—servers and virtual machines (VMs), storage, networks, operating systems—from a cloud provider on a pay-as-you-go basis.
 - d. Examples are:
 - i. Amazon Web Services (AWS)
 - ii. Microsoft Azure
2. Platform-as-a-Service (PaaS)
- a. A third-party provider delivers hardware and software tools -- usually those needed for application development, including operating systems -- to its users as a service
 - b. PaaS is designed to make it easier for developers to quickly create web or mobile apps, without needing to set up or managing the underlying infrastructure of servers, storage, network, and databases needed for development.
3. Software-as-a-Service (SaaS)
- a. A software distribution model offered by a cloud provider where software is accessed over the Internet rather than the software being loaded directly onto a locally available server or computer (for example, business applications and website hosting).
 - b. Users pay a subscription fee to gain access to the software, which is a ready-made solution
 - c. The software provider may host the application directly or may contract a third-party cloud provider to host it
 - i. Some of the suppliers providing products to the community housing sector offer SaaS services and typically use third-party cloud providers to host it such as Microsoft Azure and Amazon Web Services (AWS).
 - d. SaaS software applications are typically accessed via web browsers

The concept of cloud computing is not new. In the 1970s and 1980s, Microsoft, Apple and IBM developed technologies to support a cloud environment, in advancing the use of the cloud server and server hosting. In 1999, Salesforce became the first company to deliver business applications from a website. In 2006, Amazon launched Amazon Web Services to manage computing and storage facilities in the cloud. Microsoft and Google followed suit not long after.

Some of the suppliers to the community housing sector state their products are cloud-based, some are hosted and some are currently only available as on-premise i.e., installed on the CHO's servers.

It is therefore important to distinguish between cloud and hosted solutions:

1. Hosted services are offered by a vendor which owns and maintains physical servers in a private location. The system is available to clients, typically through a direct network connection via a virtual private network⁷, remote desktop⁸, etc. that uses the Internet.

⁷ A service that creates a safe, encrypted online connection.

⁸ A program or an operating system feature that allows a user to connect to a computer in another location, see that computer's desktop and interact with it as if it were local.

2. Cloud is defined as a model for enabling convenient, on-demand network access to a shared pool of computing resources (e.g., networks, servers, storage, applications, website hosting and services) that can be rapidly accessed with minimal management effort or service provider interaction.⁹ The system is accessed over the Internet via a URL¹⁰ which is distributed to users requiring access to the system using a web browser.

In the community housing sector, systems provided via the cloud or by hosting are typically licensed on a Software-as-a-Service model, through an annual or monthly subscription fee which is typically priced based on:

- either the number of users or the number of properties owned and managed and
- support costs being included in the annual subscription fee.

In other industries, cloud solutions are offered based on the amounts of data or computing being used, and where users can use as much or as little of a service as needed at any given time. This is not the model used in the housing sector.

Under a SaaS model, the supplier administers and manages the service for both the environment and application in:

- ensuring availability 24*7*365
- monitoring performance
- delivering updates of the product
- implementing patches to resolve any functionality issues identified
- administering backups
- ensuring disaster recovery processes are in place

Based on this, SaaS solutions enable you to lower your operating costs, run your infrastructure more efficiently, and scale as your business needs change i.e., if your organisation grows, you would either purchase more user licences or pay a higher subscription fee if the number of properties owned or managed increases.

McKinsey & Company advocate that the value potential of cloud is enormous, but only for those companies that understand—and adapt to—the realities of cloud economics.¹¹ It states that many organisations develop business cases, negotiate contracts and make economic calculations that do not take into account the different financial approaches and models that are specific to cloud, however McKinsey's focus here is on commercial companies that use cloud computing facilities based on migrated applications and data usage.

It is not the intention of this section to describe the various system architectures used by each supplier and how these are deployed in a cloud environment. The purpose is to set out how cloud computing offers improvements as well as the benefits that can be gained when compared to the previously traditional methods of systems management i.e., on premise solutions. Such improvements and benefits may be identified as follows:

⁹ <https://www.nist.gov/publications/nist-definition-cloud-computing>

¹⁰ A Uniform Resource Locator, colloquially termed a web address, which is a reference to a web resource that specifies its location on a computer network

¹¹ <https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/cloud-economics-and-the-six-most-damaging-mistakes-to-avoid>

Improvement	
1. Hardware	Cloud providers maintain all the necessary hardware. This means your CHO does not have to buy (or lease) and manage physical servers nor install and update software either on the server or on a user's computer. The provider is also responsible for managing data security.
2. Access	Staff can access the system anytime, from anywhere and using any device if the product is mobile aware. All that is needed is a logon and an Internet connection
3. Scalability	Cloud services can be scaled up and down to cost-effectively match peaks and troughs in contrast to a traditional on-site infrastructure and applications set which must have sufficient capacity to cope with maximum demand.
4. Costs	There is no need to invest in hardware therefore capital expenditure costs can be reduced, nor is there any need to have a large IT team to manage system operations. Expenditure can be switched to ongoing operating budgets With SaaS licensing, you only pay for what you need.
5. Digital	Cloud computing underpins all digital business models. Cloud platforms can help deploy new digital customer experiences in days rather than months and can support analytics that would be uneconomical or simply impossible with traditional technology platforms. ¹²
6. Resources	Staff can be deployed to more value-added tasks such as business and systems analysis
7. Connectivity	Cloud providers <i>should</i> have excellent network connectivity, supporting a mobile and flexible workforce, however, note the potential disadvantage below.

Potential disadvantages to be aware of include:

Factor	
1. Performance	Performance -- such as latency -- is largely beyond your control. Network and provider outages can interfere with productivity and disrupt business processes if you are not prepared with contingency plans. Most suppliers to the sector do however guarantee 99% access but with caveats on exceptions in their support contracts.
2. Costs	System suppliers are dependent on their cloud service supplier and will pass on costs as and when they increase Costs may also increase in relation to data storage, so again it is important to assess the provisions of the support contract.

¹² <https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/three-actions-ceos-can-take-to-get-value-from-cloud-computing>

10. Conclusions

This document has highlighted a range of software and technology improvements that CHOs should consider (on the basis that they are already not doing so).

It is important to note that one size does not necessarily fit all, so some of these suggested improvements may not be relevant to all CHOs in view of their size or scope of operations.

The interpretation of what constitutes an improvement is somewhat subjective. What may be deemed as an improvement by some, may be viewed as standard or expected functionality by others. It therefore depends on what you are using, identifying where your issues and gaps are, and then being clear about what you want.

Furthermore, being clear about what you want needs to be set out in your information systems / information technology strategies. It is therefore recommended that CHOs should first consider the approach set out in **01 Developing an IS / IT Strategy.pdf** and which should be read in conjunction with **02 IS/IT Strategy Toolkit.xlsx**.

It is important to consider a range of options when assessing potential improvements in terms of:

1. Supplier commitment to the market and product roadmap
2. Assessing the level of gaps and issues with your current systems and infrastructure
3. Determining how your current systems and infrastructure will support your business drivers
4. Assessing whether you need to:
 - a. Request your current supplier to develop enhancements and assess the timescales by which these could be done (assuming the supplier is willing or able to develop them)
 - b. Procure an alternative system to best address the issues you have identified.
 - i. If adopting this option, any procurement should not commence until you have reviewed all of your business processes and thoroughly documented your business requirements.
 - ii. It is imperative that thorough due diligence is applied when evaluating alternative systems.