Capabilities and Research Matrix

Capability	Rationale and Drivers	Timescale to realise	Enabling Technologies and Behaviours	Barriers to development or adoption	Supports and Case Studies	Suggested Research Needs
A statement of the capability which stakeholders in dbB will need (feel free to create subsidiary capabilities below a high-level one if this will clarify your argument)	Why is this capability needed, what's its benefit or what threat/problem does it address?	Short (can access some quick wins) (<3 years) Medium (3 - 7 years) Long (Aspiration) > 7 years	Clarify whether the enablers need Research (to create new knowledge) or Initiative (requires action or investment) Identify both if both are needed	Blocks and barriers (converse to Rationale and drivers)	Identify any pilots, demonstrators, use cases, case studies that would help uptake	What research should be commissioned to deliver the enabling technologies and behaviours and thus the capability?
Using digital innovations to meet the housing and care challenges of an ageing population	Digital technological development can help to meet the challenge of an ageing population. Technology can help assist older people to live independently, and address issues of loneliness or social isolation, as well as reducing dependency on health or social care, which have significant costs to the state.	Short to medium	There is already digital innovation which could be uptaken at a wider scale, however there is a need for further research on their impacts, benefits and risks.	Ethical issues/ Funding/ Fragmented Local Authority provision/ Organisational issues/ Lack of consumer market/ Lack of awareness of innovations	Examples of existing digital tools mobilized in the research: Telecare products, Telehealth, mphealth.	Evaluation of impact and benefits/ Research on ethics and unintented consequences following the use of technology/ Access and inequality in the use of digital tools/ Consumer market and business model research/ Research on attitudes and acceptance of digital tools/ Integration of the new technologies in a portfolio of existing services
Developing digital innovation and better use of data in the planning system	Planning is not fully digitised and only basic digital tools (such as the Planning Portal) exist. Further digitisation might help address the main criticism of the planning system, often said to be slow, complex and costly. Digitisation could reduce time and costs, improve public consulation, and increase housing delivery, and improve housing provision through better use of data.	Short to medium	Need for funding and support for existing innovation and the wider uptake of digital tools. Need for research on the gaps in knowledge identified.	Decentralisation in the UK planning system/ Issues of ownership, privacy and security around data collection/ Lack of time, skills and resources for change/ Resistance to change among stakeholders/ Scattered and uncoordinated innovation.	Innovative Planning- Plymouth City Council/ Digital Planning in Singapore/ Future Cities Catapult supported initiatives	Research on the benefits of digitisation of the planning system/ On the specific application of this knowledge to the housing sector/ Research on the priorities of the digitisation of the planning process and the stages which should be digitized first/ Research on the optimal regulatory framework level for digitisation/ Research on robotisation and Artificial Intelligence
Digitising housing production through off-site housing manufacture	Housebuilding has lagged behind demand for decades, and there is a consensus that a lack of housing supply impacts negatively on housing affordability. The vast majority of dwellings are assembled on site. Digitisation and off-site manufacturing might offer a solution to the low output of the housing industry and its poor productivity.	Short to medium	Need for initiative, and in particular investment, to adress the issue of profitability regarding traditionnal on-site housing manufacturing. Very often companies are not confident that innovation will be commercially rewarding, or believe the market is too difficult to access. There is a need for investment in the sector.	Benefits might not bring direct advantage to the developer or the building contractor, which might result in a lack of incentives/ Difficulty in finding a product that allows to use available land regarless of size and is still more profitable than on-site construction/ Some risks might be more significant in the off-site housing industry.	Examples abroad such as Sweden, Germany and the USA. In London, Croydon Council has recently granted planning permission for large scale modular housing.	Research to develop a consensus around a taxonomy for off-site manufacture/ Identifying the nature and scale of the current provision of off-site housing manufacture (OSM)/ Reasons why other countries are progressing faster/ Evidence of the outcomes of such housing to date/ Evidence on which digital tools will make OSM viable/ Research on lessons from previous UK experience with OSM/ Supply and demand factors which shape digital needs/ Research on non-digital issues that need to be considered.
Ensuring better housing governance, maintenance and management through use of data and digital technologies	Governance, management, maintenance and facilities management are key when it comes to issues such as housing safety standards and housing quality regulation, and they can have considerable effect on the delivery of sustainable housing capable of meeting peoples' needs. The emergence of new digital tools and technologies have the potential for impact upon the construction industry, and it may also affect the way we govern, manage and maintain housing stock	Short to medium	Need for action and investment particularly for the retrofit of stock, and need for further funding to reduce inequalities in innovation between the new-built and the existing stock. However, there is also a need for more knowledge, particularly on human barriers.	Issues with data collection, processing, ownership and access; Challenge of retrofit; Fragmented and complex nature of the housing stock.	London Heathrow Airport: the use of digital tools in the construction industry and in Digital Facilities Management (DFM). Digital services for tenants, case study of Chimni: its aim is to facilitate housing management for homeowners by providing an online tool in the form of a digital dashboard.	Research on impact and cost-benefit analysis/ Research on data ethics and security/ Human barriers to the implementation of digital tools to the housing sector/ Inequality of access to such tools/ Research on governance challenges/ Research on the challenge of retrofit.