

RESEARCH AND INNOVATION POLICY

OPERATIONAL GUIDELINES



shaping the way cities move

Section 1. Introduction

The Centre for Research and Innovation (CERI) at the Directorate of Urban Land Transport (DULT), Government of Karnataka, administers the Research and Innovation Policy to provide the necessary impetus to support research initiatives and accelerate innovation in sustainable urban mobility. The Operational Guidelines provide details of programs under the Research and Innovation Policy as per the sections below.

No.	Policy Action	Who is it of interest to?	Link to section
1	Call for Research Topics (CART) Program	Government stakeholders	Click here
2	ASPIRE (Annual Research) Program	Research and Academic Institutions	Click here
3	Research Fellowship Program	Post Graduate and PhD candidates	Click here
4	Apprentice Research Fellowship Program	Academic institutions	Click here
5	Testbed Initiatives and Projects	Start-ups and Innovators, Research and Academic Institutions	Click here

Section 2. Research and Knowledge Activities

Research and Knowledge activities will be based on two programs - Call for Research Topics (CART), and ASPIRE, DULT's Annual Research Programme.

2.1 Call for Research Topics (CART)

2.1.1 DULT will put in place an annual "Call for Research Topics" (CART) soliciting research ideas and suggestions from Government stakeholders in topics including, but not limited to Active mobility, Public Transport, Micro-mobility, Urban Freight and Travel demand management.

2.1.2 CART will be announced on the DULT website in **November** every year, and requests will be sent out to identified government stakeholders seeking views on issues and challenges in urban mobility. Problem

statements will be sought on subjects related to urban mobility in a prescribed format.

2.1.3 The Policy, Research, Data and Innovation team will constitute an internal committee to engage with the stakeholders, review the problem statements received and shortlist research areas and projects to be taken up.

2.1.4 The prescribed format for procuring research ideas (*The format can be seen [here](#)*) will be circulated to the concerned authorities for their inputs in the month of **November**, every year.

2.2 Annual Research Program (ASPIRE)

2.2.1 “**ASPIRE**” is DULT’s annual research programme for identification of priority research areas in the field of urban mobility, taking into account both technology- and policy-oriented research. Focus areas would be the following but not limited to;

- promotion of tools supporting urban transport policy development, such as: integration of land use planning with transport, coordinated information and communication strategies targeting transport users and operators;
- promotion of inter-modality between existing mobility services; and
- promotion of innovative intermodal mobility services in urban areas etc.

2.2.2 Research Projects are envisaged as-

- a) DULT’s Independent Research;
- b) Collaborative Research in partnership with academic institutions; and
- c) Sponsored Research, wherein problem statements may either be internally identified or suggested by research institutions.

2.2.3 DULT’s research areas will be informed by stakeholder suggestions through CART, research ideas emanating from interactions with research institutions, deliberations in DULT technical Groups, problem Statements from DULT’s urban design and transportation engineering verticals and learnings from the quarterly review tool (CALIPER) of DULT projects.

- 2.2.4 The list of priority research topics will be finalized by **January** every year by DULT.
- 2.2.5 Proposals for conducting research in the identified research topics or for research ideas will be sought from academic and research institutions through DULT website and/or the Seva Sindhu portal of the Government of Karnataka. Proposals will be called in the month of **February-March**, every year. (*Application form can be seen [here](#)*). Unsolicited applications will not be entertained.
- 2.2.6 The DULT will constitute a committee that may include external independent experts to review the research proposals, evaluate the relative benefits of proposals, and recommend the research proposals for funding support. The approval for Research Proposals under ASPIRE will be given by DULT based on the recommendation of the committee.
- 2.2.7 Research grant will be released to selected research proposals and shall be based on agreed milestones at the start of the research project.
- 2.2.8 Quarterly reviews will be conducted by the CERI team to assess project status and outputs.
- 2.2.9 Documentation of the research project in the form of detailed report and presentation will be required to be submitted by the organization undertaking the research project.
- 2.2.10 Research outputs and results from research projects will be disseminated to relevant stakeholders.

Section 3. DULT's Fellowship Programme

DULT'S fellowship program will on board research fellows and apprentice research fellows. Apprentice Research Fellowship is a unique initiative that provides an opportunity for research students from reputed academic institutions to intern with DULT for a specified time. The following section provides details of DULT's fellowship programme.

3.1 Research Fellows

3.1.1 Call for Applications

Notification of the call for applications from interested individuals will be published on the DULT website. Interested individuals can also either walk in or send their application with full bio-data to the DULT by email.

3.1.2 Eligibility and selection

- a) Research Fellowship will be open to individuals having a post-graduation degree or above in any relevant field such as architecture, civil engineering, urban planning, urban design, landscape architecture, transportation engineering, transport modelling, information technology, data analysis and such others from reputed institutions and universities.
- b) Applicants must have scored an average of at least 60% in the relevant post graduate course to be eligible for the fellowship.
- c) Applicants must have a flair for research, possesses relevant computer skills and knowledge of relevant software such as Auto CAD, GIS, SPSS, Python etc., as applicable.
- d) Selection will be done through an interview.

3.1.3 Duration of Research Fellowship

The duration for Research Fellowship Programme would be a minimum of 6 months. DULT will provide mentorship to the research fellow.

The terms and conditions of engagement of the Research Fellow will be governed as per the HR policy of DULT and the research fellows will be eligible for a monthly stipend.

3.1.4 What is expected from the Research Fellows?

During the fellowship tenure, monthly reviews will be conducted to evaluate research outputs. Additionally, research fellows may also be deputed to at least one national workshop to present their work for peer review or for gaining awareness on current research in urban mobility.

3.1.5 Fellowship Completion

Certificates will be issued towards the end of the fellowship period based on work output.

3.2 Apprentice Research Fellows

3.2.1 Call for Applications

- a) DULT will invite applications on its website for “Apprentice Research Fellowship Programme”.
- b) DULT intends to sign MOUs with various academic institutions for a joint internship programme. Applications will be invited for the “Apprentice Research Fellowship” for interested candidates to apply through their academic institutions, providing them an opportunity to associate with DULT for the duration as required for their academic/research project. Based on the project requirements, DULT may share or facilitate access to data or information on polices/projects in urban mobility.

3.2.2 Eligibility and selection

- a) Apprentice Research Fellowship will be open to individuals having a post-graduation degree or above in any relevant field such as architecture, civil engineering, urban planning, urban design, landscape architecture, transportation engineering and such others from reputed institutions and universities.
- b) Applicants should have scored at least 60% in their Master’s Degree.
- c) Interested applicants must submit a recommendation letter from the institutions where they are pursuing academic/research activity.
- d) Applicants are expected to have knowledge of relevant software such as Auto CAD, GIS, SPSS, Python etc., as applicable.
- e) Candidates may be selected on the basis of an interview.

3.2.3 Duration of Apprentice Fellowship Programme

The duration for Apprentice Research Fellowship Programme is based on project requirement and student availability. DULT shall provide mentorship to the research fellow. During the fellowship tenure, joint weekly and monthly reviews will be conducted to evaluate research outputs. Certificates will be issued at the end of their fellowship period.

Section 4. Assessing Research and Innovation outputs through Testbeds, Living Labs & Pilots

Innovate@DULT is the flagship programme of DULT which aims to leverage the innovation ecosystem in the State for identifying and testing innovative technological solutions, products and processes in urban mobility.

One of the ways in which DULT proposes to encourage innovation in urban mobility is through implementation of carefully designed testbeds. These provide an opportunity to the Government agencies and the innovators to test their products, processes and technologies in real world scenarios for product, policy, regulatory or implementation feedback and insights. The following section highlights the lifecycle stages typically involved with a testbed from inception to conclusion.

4.1 Identification of testbeds

DULT's research agenda in sustainable urban mobility will be set/refreshed every year and urban mobility testbeds will be identified through stakeholder consultation. Testbed ideas will be identified through the following mechanisms/sources:

4.1.1 In-house ideas

These testbeds correspond to ideas emerging in-house through various means e.g., DULT project/program outputs, Technical Group outputs, employee ideas etc. The source of testbed ideas could be as follows:

- Testbed ideas emerging from CERI's research and academic literature reviews of some of the best practices across the globe.
- Testbed ideas emerging as an outcome from discussions and deliberations in the Technical Groups and Organizational Verticals.
- Testbed ideas resulting from a collaborative interface with academia and think tanks.

4.1.2 Testbed ideas from external stakeholders

- A call for Testbed ideas will be put out on DULT website to encourage innovators to apply with their requirements.
- DULT also receives impromptu applications/requests from innovators seeking data assistance and support to test new ideas. DULT will be open to considering such testbed ideas subject to successful

appraisal. Bespoke testbeds will be designed and supported in collaboration with innovators. DULT actively encourages interested innovators to share their testbed ideas highlighting details of proposed testbed project to dultbangalore@gmail.com.

4.2 Appraising Testbed Ideas

DULT will formulate a framework for appraising testbed ideas. Broadly, the framework for appraising testbed ideas will include an appraisal and impact criteria based on alignment with urban mobility goals. Appraisal of testbed ideas would be on the following basis:

1. For **Product** related testbeds ideas, Technology Readiness Level (TRL) will be the criteria for selection.
2. For **Technology** related testbed projects, assessment of maturity stage for associated technology will be the criteria for selection.
3. For **Process** based testbed ideas, framework for testbed project planning and execution will be evaluated

Selection of testbed partners:

As per testbed requirement, relevant government stakeholders, academic and research institutions as well as other activity partners will be brought on-board by DULT for successful implementation of the testbed.

Selection of testbed participants:

Subsequent to appraisal and selection of testbed, applications will be sought from interested innovators/organizations to participate in the testbeds through the DULT website.

The selection process for a testbed participant will be carried out through an extensive appraisal and oversight from a DULT nominated panel. Based on application evaluation by a DULT nominated panel, successful applicant(s) will be selected to co-create the testbed along with DULT.

4.3 Developing a data collection and project implementation framework

- 4.3.1 DULT will mobilize a Testbed Project Management Team for Testbed execution that will be responsible for developing an implementation framework for the proposed Testbed.

4.3.2 Data collection is an important step while testing a product/theory/activity and is required to analyze the performance of the project. The Testbed Project Management Team with the help of testbed partners and participants and internal resources, will also develop a data collection framework.

4.3.3 Testbed participants will be mandated under the data collection framework for the following-

- a) Collection of data while conducting the testbed
- b) Data sharing
- c) Data management protocols and risk management

4.4 Agreement/ MOU's

DULT will work with the successful testbed partner and participants for planning, implementation, evaluation and analysis by entering into MOUs/agreements for Testbed projects.

4.5 Evaluating Testbed Results

The Research and Innovation policy mandates a thorough evaluation of results of the testbed to inform the future course of action.

4.5.1 Evaluation metrics to assess Testbed outcomes will be agreed with the testbed participants/partners at project planning stage.

4.5.2 The Testbed evaluation and monitoring team will develop appropriate parameters that will help in understanding the success of testbed outcomes relative to the prevailing baseline.

4.5.3 The evaluation parameters will be designed so as to facilitate:
a) measuring testbed results reliably and consistently; and
b) analysis using various statistical tools or algorithms to determine learnings, potential for scalability and replicability.

4.5.4 With the help of data analysts, researchers and experts, the collected data will be analysed to provide relevant insights to help improve their solution to more closely meet the requirements of the target audience.

4.5.5 The implementation of the Testbed project will be documented and disseminated to relevant stakeholders. If required, DULT will use learnings from Testbeds to design and implement pilots or projects in collaboration with the stakeholders.

4.6 Funding for Testbeds

Funding may be provided by DULT for implementation of the selected testbeds including for testbed project management, data collection and evaluation on a case-to-case basis. DULT may also fund pilots by test bed participants whose solutions have been judged to be promising and innovative with a potential to bring out a transformative change in sustainable urban mobility.

4.7 Incorporating insights into Guidance and Scaling up

- 4.6.1 Every year, the Centre for Research and Innovation (CERI) will bring out an Annual Report that will inform DULT on policy, product and process changes required to tangibly improve sustainable urban mobility. The Annual Report will feature activities undertaken under the Research and Innovation Policy including outcomes from research projects and testbeds.
 - 4.6.2 For information on the Research and Innovation Policy of the Directorate of Urban Land Transport, please click [here](#).
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Annual Calendar for Research and Innovation Policy – Illustrative

