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Proposal Addendum for Community Geographic Information System (GIS) in the Mumbai Metropolitan Region

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1. Detailed information on how the communities will benefit.

Urban communities' aspirations for the development of their collective and shared resources — land, environment, housing and public spaces — crucially depends on spatial information, whose accessibility and reliability is vital in determining strategies and opportunities for equitable development. We seek to benefit communities through providing this information in a networked and interactive form — through the development of an open source geographic database and mapping platform localised in Indian languages to assist community organisations in visualisation, analysis and decision-making around the development of their shared resources in the city. The community GIS platform proposed in our project will be operationalised through three key components: **the base map, the mapping toolkit, and web services**. These components will be designed to maximise their usability by non-technical users and citizen cartographers for making maps and annotating urban spaces and structures, leveraging publicly available spatial data and community information resources in an open source framework, and networking between user groups and organisations working towards common goals of community empowerment and social action in the mega-city.

I. Base Map

This component, also known as the Mumbai Free Map, is currently under development by the project collaborators (see <http://www.freemap.in> and <http://freemap.crit.org.in>). This base map will contain key features and attributes of the natural and built environment, including streets, railways, highways, buildings and infrastructure, derived from non-copyrighted public sources such as the municipal development plans, and our archive of project materials and documentation at CRIT. Through the base map, spatial data that is otherwise available in restricted or fragmented forms from state and private agencies will be published online in a standardised and accessible framework. The base map will be a rich database which will provide an open medium for focused local mapping, annotation and data gathering — as well as searching, analysis, and visualisation of the entire database through structured queries (see below). For example, the base map will contain all data relevant to public and open spaces in the city, such as their planning reservations, ownerships, locations, size, neighbouring land uses, present usages, and degrees of

accessibility. While liberating substantial static information about their own resources, communities will also benefit from the base map as it will be a medium for producing their own dynamic information. Through the free and shared infrastructure of the base map, communities will be able to both read and write, draw from and inform the system, making the base map interactive and adaptive to the changing urban environment.

II. Community Mapping Toolkit

This component, also known as the Locative Media Toolkit, is currently under development by the project collaborators. Together with the base map, the mapping toolkit will provide communities and users with an application for loading and managing geo-data, creating and geo-referencing maps, and plotting and publishing media and other kinds of data on the base map (see above). Extensions of this toolkit for specific applications and community interventions will be explored for such areas as mapping housing, environment, and public spaces. The toolkit will facilitate the annotation and semantics of the lines, points and polygons of base map in a wiki-like manner, with rich data ontologies structured to suit particular types. For example, the toolkit can be used in conjunction with the base map to gather information about and express relations between different types of housing in the city, including ownership and tenancy, structural condition, eligibility for redevelopment, heritage significance and architectural value. The toolkit could thus benefit communities by allowing them to connect their local and regional maps produced with the toolkit to the city-wide patterns and relations contained in the base map database. The toolkit will benefit communities both by giving them the means to produce rich and detailed maps of their own localities, and by networking these community maps through the base map medium, thus providing a wider context in which the impact of local developments can be assessed in relation to the overall urban fabric.

III. Web Services

This component, under discussion by the project collaborators, aims at creating an online environment in which community organisations and individuals publish geo-referenced data feeds through use of the toolkit, and these feeds and web services are aggregated via the base map into a rich ecology of location-based civic information, continuously published and collectively managed by its users and stake-holders. A modular approach to the design and development of this component will allow users to geo-locate and publish/syndicate their feeds into a web service that stores, shares, and maps their data. This online environment aims to facilitate collective research, resource sharing, and strategic networking between the various community mapping nodes within the web services ecology, enabled by the infrastructure of the base map and the software in the mapping toolkit. We hope that the public will ultimately benefit through using this free infrastructure and software to publish their own maps and information to each other in a decentralised and peer-to-peer environment, through which community information is produced and exchanged openly and the urban development process is made more equitable as a result.

2. Definition of the target audience for training.

The target audiences for training in the platform described above will comprise different groups at different phases in the course of the project — from the initial team of project collaborators, to technical developers, localisers and testers, to the final user groups, community organisations and the general public — in a process of iterative development based on milestones for each phase. The proposed time-line of the project is 24 months, from May 2005 to May 2007. This is divided into a schedule of four six-month phases of activity. The timeline below (also contained in the original proposal) is supplemented here with a description of the desired target audiences for training in the platform.

PHASE I: May to November 2005

Acquisition, collation and indexing of all material from earlier CRIT projects, supplemented by archival maps, satellite and remote-sensing imagery, land survey records, development plans, and other forms of non-spatial social and economic data, and community information such as interviews and site photography. Team research into hardware and software choices, proprietary versus free software solutions, and the present state of the GIS industry in India. Development of base map.

Target Audiences: CRIT Executive and Project Cell Members, Software Developers

PHASE II: December 2005 to April 2006

Vectorisation and digitisation of spatial and non-spatial information and creation of master GIS database of Inner City, Post-Industrial Landscapes, Western Suburbs, and Metropolitan Periphery projects. Installation of server and networked infrastructure to support development of base map, in collaboration with technicians and programmers. Development of community mapping toolkit.

Target Audiences: Urban Researchers, Media Practitioners, NGO Tech Supporters, Localisers

PHASE III: May to November 2006

Completion of the base map and online beta distribution of the master GIS database created in the previous phase. Convening of workshops with communities and stake-holders to introduce the platform, and receive feedback and suggestions on the programming of customised applications in relation to local developmental priorities, community aspirations and interests, and technical feasibility. Debugging and trouble-shooting of base map and beta distribution of community mapping toolkit. Development of web services.

Target Audiences: College Students, Urban Activists, NGOs and Community Organisations

PHASE IV: December 2006 to May 2007

Completion of application development and distribution to communities, public demonstration of the full platform, and interaction with stake-holders and user groups on potential future interventions enabled by the base map and mapping tools. Launch of network of community mapping nodes on the basis of existing project stake-holder groups, to promote further use and development of the platform in the Mumbai Metropolitan Region and throughout the Asia-Pacific.

Target Audiences: City Public, NGOs and Community Organisations in the Asia-Pacific

The separate components of the platform described above will be initially developed, deployed and tested within CRIT's ongoing research projects and community interventions during the first two phases. The project collaborators will organise community mapping workshops in Mumbai with the target audiences at the conclusion of the first *two phases* and at the conclusion of the *third* and *fourth* phases — a total of three intensive week-long workshops — to test the platform in a real-time setting, understand data structures and forms, and solicit feedback on usability, interface design, and facilitate planning and support for further phases of the project.