Organization of the different tasks involved in a street addressing operation

**PHASE 1: PREPARATION AND LAUNCH**
- Aerial photography
- Urban sketch map
- Existing maps
- Plot maps
- Topographical maps

**PHASE 2: PILOT OPERATION**
- Identify zones to be addressed
- Choose codifying system
- Basic street addressing map
- Draft signposting maps
- Manufacture signposts for pilot zone
- Install signposts in pilot zone
- Number entryways in pilot zone
- Public awareness campaign
- Census in pilot zone

**PHASE 3: GENERALIZATION OF STREET ADDRESSING**
- Final street addressing map
- Street index
- Publication/Dissemination
- Address index
- Entryway numbering
- Door-to-door census
- Public awareness campaign

Project manager’s approval
Preliminary tasks

Before launching the street addressing operation, several actions need to be taken:

- **Create an orientation package.** This is a synopsis of the operation. It needs to be established before the decision is taken by the financial underwriter to launch the operation, and describes all the different phases and options. It also provides an estimate of cost and duration. This is a first feedback tool.

- **Define tasks and responsibilities.** Define clearly the role of each player, and relations between the different parties.

- **Set up a Street Addressing Unit,** which will design and manage the project.
Create an orientation package

The street addressing operation presents several alternatives and requires that choices be made. These choices vary according to the particular town and to the financial resources available. The work MUST be prepared upstream. This will make it possible, on the one hand, to present the operation to the municipal council for its approval, and, on the other, to prepare an operations timetable. Creating an orientation package in the form of a synopsis demonstrating progress and the choices to be made at each stage of the project is advisable. Before presenting this package, the responsible person should be very clear about the choices and alternatives involved in the evolution of the project. The budget, deadlines and the institutional setup will depend on these choices, and vice versa.

The package can be prepared within a short period of time (a maximum of two weeks) by a consultant specializing in street addressing operations, in cooperation with the financial underwriter to whom the consultant will submit all possible alternatives, along with their advantages and disadvantages. The financial underwriter is then responsible for making the choices. The package will back up the presentation made to the municipal council.

Preparing the orientation package:

I – Preliminary questions:
Who does what, who is in charge, what will be done with the old system, how much time will the operation take, what will it cost, what relationship is there between this operation and the land registry system?

II – The three options / Estimated costs
Presentation of the three options designed principally as a function of available resources, and presentation of their respective estimated costs.

III – The decision-making package, and how to interpret it
Depending on the option chosen, additional choices must be made not only as regards costs, but also in respect of the characteristics of the town in question, and of expected results. A multiple-choice questionnaire helps in responding to any question that will arise during the operation.

IV – Cost, planning, and estimated duration
Now that we have a clear idea of the project, we can estimate its budget and estimate the duration and, if possible, prepare the institutional setup.
V – Presentation to the council, and discussion
The above steps will result in a solid and complete case the person responsible (the mayor, or a representative) can use when making the presentation to the municipal council. If reaction to the presentation is positive, (s)he should then engage in a dialogue to confirm the operation.

I. The major preliminary questions in every street addressing operation

Who is responsible for the operation?
- The municipality. Even if management is undertaken by another body, this is a municipal operation.

What to do if the town already has a partial system for identifying streets and entryways?
- Leave the current system in place, and apply a new system to the rest of the town.
- Keep the current system but modify and improve it, then apply it to the rest of the town.
- Remove the current system and apply the new system to the whole town.

In what way is the street addressing operation related to the land registry system?
Street addressing does not require the elimination of cadastral references. It complements, rather than replaces them. The two systems can co-exist without problem. Where the cadastral system is only partial, stagnant or non-existent, the street addressing system can function as a low-cost first approximation, i.e., an appropriate simplified cadastre.

How long will it take to implement the system and its various applications?
This varies from town to town, but it usually takes one to three years.

How much is it likely to cost?
The average cost of a street addressing operations range between $0.5 and $5 per entryway. However, it is recommended that a budget be decided from the outset from which reasonable objectives may be determined, since the program and the objective of the operation are closely linked to the available budget. It is not absolutely necessary to address the entire town at an early stage. The generalization phase can be progressive, spaced out over time as a function of financial and local capacity. The start-up budget will make it possible to determine reasonable objectives and a reasonable program so that, no matter the scale of the project, it can be carried out with the greatest chance of success.

II. Presentation of alternatives and their respective costs
The specifics of any street addressing operation are a function of the site, and of the financial capacity of the financial underwriter. Below we present three
options based on the same methodology, but differing in the materials and the means of execution employed:

**High option:**
Ample resources  
Cost per inhabitant: $5  
Possible use of more elaborate materials, either for the realization (computer hardware and software, type of aerial photography), or execution (type of street plaques, number of plaques per corner, etc.) of the project.

**Low option:**
Meager resources  
Cost per inhabitant: $0.5  
Even with meager resources, a functioning street addressing operation can be carried out. If this option is adopted as a first approximation, there should be follow-up in the form of a generalized and/or improved system.

**Intermediate option:**
This is a compromise between the two extreme options, and will often be chosen by a town such as Doloba, as described below.

See table on following page.
<table>
<thead>
<tr>
<th>TASKS</th>
<th>HIGH OPTION</th>
<th>INTERMEDIATE OPTION</th>
<th>LOW OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street Addressing Unit</td>
<td>- an independent unit (private or public) - assisted by an external consultant</td>
<td>- a public unit, set up by the financial underwriter for the duration of the operation only</td>
<td>- services of the local administration</td>
</tr>
<tr>
<td>Zones to be addressed</td>
<td>- the entire town</td>
<td>- town center and densely populated and structured neighborhoods</td>
<td>- town center only</td>
</tr>
<tr>
<td>Equipment</td>
<td>- scanner, printer, mapping software, plotter - high-level aerial photos - GIS</td>
<td>- scanner, printer, mapping software - low-level aerial photos</td>
<td>- technical design materials</td>
</tr>
<tr>
<td>Map</td>
<td>- computerized street map - street GIS</td>
<td>- computerized street map</td>
<td>- street map on paper</td>
</tr>
<tr>
<td>Density of street plaques</td>
<td>- signpost all intersections - 4 or 8 street signs per intersection</td>
<td>- signpost one out of two intersections - 4 or 2 street signs per intersection</td>
<td>- signpost only certain main streets or one intersection out of two or three - max. two street signs; some intersections with no street sign</td>
</tr>
<tr>
<td>Public awareness campaign</td>
<td>- media (newspapers, radio, TV.), ads, posters, logo, conferences, t-shirts, caps, and so on</td>
<td>- press release, posters - radio campaign</td>
<td>- press release - radio campaign</td>
</tr>
<tr>
<td>Street addressing a pilot zone</td>
<td>- a whole neighborhood, with prototypes for street and entryway signs - official inauguration</td>
<td>- using simulated street signs, over a relatively small area</td>
<td>- numbers or names painted, on one or two streets</td>
</tr>
<tr>
<td>Preparing signposting</td>
<td>- international call for bids for street signs, installation and guide map</td>
<td>- have street signs made, but carry out installation internally - call for total bids</td>
<td>- do not have street signs made, make them internally, use paint</td>
</tr>
<tr>
<td>Materials</td>
<td>- enamel street signs and metal posts</td>
<td>- painted metal, or wood, street signs</td>
<td>- paint only</td>
</tr>
<tr>
<td>Entryway numbering</td>
<td>- a plaque on each entryway</td>
<td>- number stenciled in, until inhabitant installs own sign</td>
<td>- number painted on buildings</td>
</tr>
<tr>
<td>Final street addressing map</td>
<td>- by a company specializing in cartography and publication</td>
<td>- by the Street Addressing Unit, with professional cartography equipment and professional staff - publication done externally</td>
<td>- by the services responsible for the operation, on paper, in black and white to reduce cost of reproduction</td>
</tr>
<tr>
<td>Address index</td>
<td>- computerized, with specialized management software - linked to GIS</td>
<td>- computerized, data base software (Excel or other)</td>
<td>- on paper, list of activities only</td>
</tr>
<tr>
<td>Management and maintenance</td>
<td>- several staff, with permanent technicians to maintain files, street addresses, census</td>
<td>- one permanent staff member responsible for monitoring and maintenance</td>
<td>- one staff member responsible inter alia for address monitoring; - maintenance is carried out by the local administration</td>
</tr>
<tr>
<td>Cost of the operation</td>
<td>- approx. $5.5 per entryway</td>
<td></td>
<td>- approx. $1 (perhaps less) per entryway</td>
</tr>
</tbody>
</table>
Estimated costs

The cost of a street addressing operation can vary significantly from one town to another, depending on the following factors:

- the urban structure of the town (density, number of streets, number of intersections, etc.)
- the choice of neighborhoods to be addressed (some or all)
- equipment and personnel used (computerization, salaries, etc.)
- quality of service provided (materials used, plaques or stencils, etc.)
- density of street plaques or signposts installed (overall or partial signposting).

Items of expenditure are generally as follows:

- unit teams and operation
- materials, equipment and transportation (investment)
- street plaques and sign posts
- census and numbering
- mapping
- pilot operation
- public awareness campaign
- consultant support.

The following table shows cost levels for two typical towns (with populations of 100,000 and 1 million, respectively), in relation to the level of service required, of density of street signs.
<table>
<thead>
<tr>
<th></th>
<th>High option</th>
<th>Low option</th>
<th>No. high</th>
<th>Total high</th>
<th>No. low</th>
<th>Total low</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Street Addressing Unit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer equipment</td>
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<td></td>
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<td>Computer</td>
<td>5,000</td>
<td>2,200</td>
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<td>0</td>
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<td>Printers</td>
<td>4,000</td>
<td>1,000</td>
<td>2</td>
<td>8,000</td>
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<td>0</td>
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<tr>
<td>Peripherals</td>
<td>4,000</td>
<td>2,000</td>
<td>1</td>
<td>4,000</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Software</td>
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<td>1,500</td>
<td>2</td>
<td>3,000</td>
<td>0</td>
<td>0</td>
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<tr>
<td><strong>Staff</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit head</td>
<td>2,500</td>
<td>1,000</td>
<td>18</td>
<td>45,000</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>Deputy</td>
<td>1,500</td>
<td>500</td>
<td>18</td>
<td>27,000</td>
<td>5,000</td>
<td></td>
</tr>
<tr>
<td>Technicians</td>
<td>1,000</td>
<td>150</td>
<td>18</td>
<td>18,000</td>
<td>1,500</td>
<td></td>
</tr>
<tr>
<td>Secretary</td>
<td>1,000</td>
<td>150</td>
<td>18</td>
<td>18,000</td>
<td>1,500</td>
<td></td>
</tr>
<tr>
<td><strong>Total Street Addressing Unit</strong></td>
<td>133,000</td>
<td>16,500</td>
<td></td>
<td>271,500</td>
<td>39,100</td>
<td></td>
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<tr>
<td><strong>Cartography</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base map</td>
<td>7,000</td>
<td>1,500</td>
<td>1</td>
<td>7,000</td>
<td>1,500</td>
<td></td>
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<tr>
<td>Final street addressing map</td>
<td>20,000</td>
<td>5,000</td>
<td>1</td>
<td>20,000</td>
<td>5,000</td>
<td></td>
</tr>
<tr>
<td><strong>Total cartography</strong></td>
<td>27,000</td>
<td>6,500</td>
<td></td>
<td>27,000</td>
<td>6,500</td>
<td></td>
</tr>
<tr>
<td><strong>Street addressing software</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>20,000</td>
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<td>20,000</td>
<td>1,000</td>
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</tr>
<tr>
<td>Training</td>
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<td>0</td>
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<td></td>
</tr>
<tr>
<td><strong>Total street addressing software</strong></td>
<td>120,000</td>
<td>1,000</td>
<td></td>
<td>120,000</td>
<td>101,000</td>
<td></td>
</tr>
<tr>
<td><strong>Signposting</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. intersections</td>
<td>7</td>
<td>1.5</td>
<td>8</td>
<td>60,000</td>
<td>6,000</td>
<td></td>
</tr>
<tr>
<td>Street plaques</td>
<td>20</td>
<td>7</td>
<td>1</td>
<td>20,000</td>
<td>1,400</td>
<td></td>
</tr>
<tr>
<td><strong>Total signposting</strong></td>
<td>76,000</td>
<td>7,400</td>
<td></td>
<td>304,000</td>
<td>55,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High option</td>
<td>Low option</td>
<td>100,000 inhabitants</td>
<td>1 million inhabitants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
<td>------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. high</td>
<td>Total high</td>
<td>No. low</td>
<td>Total low</td>
<td>No. high</td>
<td>Total high</td>
<td>No. low</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
<td>------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>670,000</td>
<td>41,400</td>
<td></td>
<td>2,806,500</td>
<td>327,100</td>
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</table>

**Numbering / census**

<table>
<thead>
<tr>
<th>Entryway numbering</th>
<th>High option</th>
<th>Low option</th>
<th>Total high</th>
<th>No. low</th>
<th>Total low</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>40,000</td>
<td>200,000</td>
<td>10,000</td>
<td>5,000</td>
<td>300,000</td>
</tr>
<tr>
<td>2</td>
<td>40,000</td>
<td>60,000</td>
<td>10,000</td>
<td>5,000</td>
<td>300,000</td>
</tr>
</tbody>
</table>

**Total numbering/census**

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Total</th>
<th>Number</th>
<th>Total</th>
<th>Number</th>
<th>Total</th>
<th>Number</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio and TV ads</td>
<td>7,000</td>
<td>2,500</td>
<td>1</td>
<td>7,000</td>
<td>1</td>
<td>7,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Brochure</td>
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<td>0</td>
<td>1</td>
<td>7,000</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Film</td>
<td>7,000</td>
<td>2,500</td>
<td>1</td>
<td>7,000</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>7,000</td>
</tr>
</tbody>
</table>

**Total public awareness campaign**

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Total</th>
<th>Number</th>
<th>Total</th>
<th>Number</th>
<th>Total</th>
<th>Number</th>
<th>Total</th>
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<tr>
<td></td>
<td>14,000</td>
<td>0</td>
<td>14,000</td>
<td>0</td>
<td></td>
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<td></td>
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</tbody>
</table>

**Consultant support**

<table>
<thead>
<tr>
<th></th>
<th>Months</th>
<th>Total</th>
<th>Months</th>
<th>Total</th>
<th>Months</th>
<th>Total</th>
<th>Months</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impl. &amp; training</td>
<td>10,000</td>
<td>10,000</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>20,000</td>
<td>0.5</td>
<td>5,000</td>
</tr>
<tr>
<td>Monitoring</td>
<td>10,000</td>
<td>10,000</td>
<td>3</td>
<td>30,000</td>
<td>0</td>
<td>10</td>
<td>100,000</td>
<td>2</td>
</tr>
</tbody>
</table>

**Total consultant support**

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Total</th>
<th>Number</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40,000</td>
<td>0</td>
<td>120,000</td>
<td>25,000</td>
</tr>
</tbody>
</table>
III. Checklist help with decision making

This checklist is a questionnaire that should be responded to in stages. Other alternatives might be considered, but this form makes it possible to capture the operation in its entirety and to respond to the major questions likely to arise.

The consultant, if one is employed, will carry out this work with the financial underwriter. (S)he explains what each phase of the operation consists of, and describes the alternatives, along with their advantages and disadvantages.

If there is no consultant, the person responsible for presenting the options to the financial underwriter may find such information in the technical notes contained in this manual, which contain the specificities required.

Once the questionnaire has been completed, data are re-transcribed into a summary text: the synopsis of the operation.

The next page shows the form used for the town of Doloba, which can be used as an example. Attached is a blank form.
# Street Addressing in the Town of Doloba

The form devised to assist in decision-making

## Orientation Form for the Town of Doloba

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Who will design the project?</td>
<td>Street Addressing Unit, Private consultant, municipal services, other</td>
</tr>
<tr>
<td>2. Who will direct the operation?</td>
<td>Municipal services, Street Addressing Unit, Other, The head of technical services will be responsible for directing the operation.</td>
</tr>
<tr>
<td>3. Which zones will be addressed?</td>
<td>The entire town, Structured neighborhoods, town center only, other</td>
</tr>
<tr>
<td>4. How should the town be divided into “blocks to be addressed”?</td>
<td>by administrative sectioning, by neighborhood, other, Administrative sectioning of the town of Doloba shows 9 sectors.</td>
</tr>
<tr>
<td>5. Which code should be chosen for the “blocks”?</td>
<td>numbers (e.g., 1.23 St.), letters (e.g., A.23 St.), initials of the neighborhood (e.g., K1.23 St.), other</td>
</tr>
<tr>
<td>6. What codifying system should be chosen for entryways?</td>
<td>Sequential, metric, other, other</td>
</tr>
<tr>
<td>7. What is to be addressed?</td>
<td>Entryways, entryways and urban objects, other</td>
</tr>
<tr>
<td>8. What should be done with the old numbering system, if one exists?</td>
<td>leave it as is, and use a new system for neighborhoods without street addressing, redo the entire town, other</td>
</tr>
<tr>
<td>9. What type of signposting will be used?</td>
<td>street plaques, street plaques and poles, stencils, paint, other, Depending on morphology of intersections, either street plaques or signposts. An attempt should be made to limit the number of signposts, since they are more cumbersome.</td>
</tr>
<tr>
<td>10. What will be the density of street signs?</td>
<td>maximum (8 or 4 name plates; all intersections), medium (2 name plates; all intersections), minimum (2 names plates; 1 intersection out of 2), other, The density of street plaques will vary depending on the neighborhood, from 4 per intersection in the town center to 1 or 2 out of 2 in surrounding areas.</td>
</tr>
</tbody>
</table>
11. Will there be a call for bids?
- yes
- no

12. For which categories?
- equipment (street signs, signposts, paint ..)
- installation
- the final street addressing map
- other

13. Will the call for bids be local or international?
- international
- local

14. How will implementation be organized?
- install all signposts at the same time
- in successive, prioritized phases
- other

15. Who will install the street plaques and signposts?
- teams from the Street Addressing Unit
- private companies
- municipal teams
- other

16. How will entryways be numbered?
- entryway plaques
- stenciled
- painted
- other

17. Who will do the numbering?
- the Street Addressing Unit
- a private company
- other

18. What applications are expected?
- local taxation
- management of equipment
- improvement in urban services
- others

19. What data will be collected during the census?
- form of occupation of each plot of land
- complete address
- water and electricity services
- surface area and length of streetway
- condition of streetway and equipment
- others

* several options possible
Development of the operation

1. Who will design the project?
The project will be designed by a Street Addressing Unit, which will be specially mobilized for the duration of the project.

2. Who will pilot the operation?
The head of technical services will be responsible for piloting the project. (S)he will communicate directly with the head of the Unit.

3. To which areas will the street addressing operation be applied?
All structured neighborhoods will be addressed. Street addressing will be carried out on a priority basis.

4. How will the town be sectioned into “units for street addressing”? 
The sectioning will be in line with the existing administrative sectioning, i.e., there will be 9 street addressing sectors.

5. Which indicator will be chosen for these units?
The address code corresponding to the neighborhood will be a number.

6. Which numbering system will be applied to entryways?
The metric system. This will be adaptable when dealing with new construction.

7. To what will the street addressing be applied?
Buildings (housing, meeting/activities buildings, buildings containing equipment) and urban objects will be addressed.

8. What will be done with the old numbering system?
It will be left in place in neighborhoods where it is already applied. However, new neighborhoods will use the new system.

9. What kind of signs will be installed?
Street plaques will be used at intersections bordered by walls or fences. Signposts will be installed at intersections with no such support. An attempt will be made to keep signposts to the minimum because of their cost.

10. What will be the density of street plaques?
This will differ by neighborhood as a function of its density and location (town center or periphery). On average, there will be two street plaques per intersection.

11. Will there be a call for bids?
Yes, for the manufacture and installation of street plaques and signposts.
12. How will the implementation be organized?
Priorities will be determined in designating neighborhoods to be addressed. The first priority will be the town center and the industrial zone since these areas are dense and structured, and house the largest number of tax-paying individuals and businesses.

13. Who will carry out the installation?
Street plaques will be installed by a private enterprise chosen through a local call for bids. The Street Addressing Unit will supervise the installation.

14. What materials will be used to number entryways?
Numbers will be stenciled on entryways, then the inhabitants will purchase their own entryway plaques.

15. Who will be responsible for the numbering and the census?
The technical teams will be responsible for numbering entryways. They will be accompanied by census-takers recruited and trained by the Street Addressing Unit.

16. What applications are expected?
It is expected that the system will be used to improve the collection of local taxes, and for better management of utilities networks and other public facilities.

17. What data will be collected during the census?
The following data will be collected:
- complete address
- type of occupation (habitation, economic activities, facility or equipment, urban object)
- type of construction (collective, individual)
- level of service available (water, electricity, telephone, etc.)
- surface area of the street
- state of streets and of the different forms of equipment.
IV. Estimated costs and duration

In parallel with the work selected, a draft map will be prepared and the project will be dimensioned.

First, we need to make a rapid estimation of the number of:
- streets
- intersections (including bordered and non-bordered intersections)
- streets already addressed, if any
- entryways to be numbered.

Figures for Doloba:

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of inhabitants</td>
<td>800,000</td>
</tr>
<tr>
<td>Surface area (hectares)</td>
<td>6,050</td>
</tr>
<tr>
<td>Number of streets</td>
<td>2,500</td>
</tr>
<tr>
<td>Number of intersections</td>
<td>5,500</td>
</tr>
<tr>
<td>Number of intersections per ha</td>
<td>1.1</td>
</tr>
<tr>
<td>Number of streets already addressed</td>
<td>96</td>
</tr>
<tr>
<td>Percentage of streets already addressed</td>
<td>4%</td>
</tr>
<tr>
<td>Number of entryways to number</td>
<td>120,000</td>
</tr>
</tbody>
</table>

Next, we choose priority areas for street addressing, and those not to be addressed, the location of the pilot operation and once again the number of intersections and entryways (cf. map on following page).

This provides a better idea of the estimated budget, and prepares us for the work.
Street addressing in the town of Doloba
Sketch map of areas to be addressed

Neighborhoods that are already addressed
Neighborhoods slated for priority addressing
Neighborhoods to be addressed in the medium and long term
Neighborhoods that should not be addressed
Cost (first phase):

The Unit’s operating budget (salaries and operating costs): $148,000 (total)
Computer equipment (investment costs): $25,000
Budget for pilot operation: $1,200
Budget for public awareness campaign: $7,000

Signposts:
- number of intersections to be signed: 2,500
- number of intersections bordered by walls: 2,300
- number of non-bordered intersections: 200
- number of signposts per intersection: 2

Total cost of signing: $84,000
Entryway numbering: paint and stenciling: $30,000
Census: census-takers and data collection/analysis: $30,000
Budget for consultant study: $10,000
Implementation of the final guide map: $20,000

TOTAL estimated budget: $355,200

Estimated duration:
Numbering and census: Here the census is used as a point of reference since it generally takes the most time (on average, 5 minutes per entryway).

Should a census-taker work 5 hours a day, 5 days a week (20 days per month), you would need 9 census-takers for 12 months for the 120,000 entryways.

Organization / timing of the different tasks:
cf. schedule, following page

V. Presentation to the municipal council

The head of the project must make a clear and detailed presentation of the project, and be in possession of all parameters, including:
- cost
- period of processing
- responsibilities
- evolution of the operation
- results anticipated.
**Adressing the town of Doloba**

**Chronogram of events**

<table>
<thead>
<tr>
<th>Phase 1: preparation</th>
<th>Year 1</th>
<th>Phase 2</th>
<th>Year 2</th>
<th>Phase 3</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codification and signposting system proposed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation and cost estimate proposed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approval by the municipal council</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addressing unit and training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic ground map</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase 2: pilot operation</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft street addressing plan and street index, then final</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selection of a pilot zone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publicity campaign for pilot zone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signposting plan for pilot zone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signposting manufacturing (prototypes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation of signposts and plaques</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numbering of entryways, and surveys</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation of the pilot zone</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase 3: generalization</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalization of the signposting plans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation, launching of bidding process, awarding of contracts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publicity campaign</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signpost manufacturing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generalization of signpost and plaque installation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generalization of numbering of entryways, and surveys</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creation of the index of street addresses</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Define tasks and responsibilities

In order to be able to take on and successfully complete the project, you must clearly define the responsibilities of each unit and individual participating in its evolution. Ordinarily, responsibilities are broken up into three units:

- **The financial underwriter:** In general, this is the entity that institutes and finances the operation. This person/body is the decision-taker.
- **The concept developer:** This is the entity that designs the project. Certain services and other partners may be associated or consulted for certain phases of the study or works.
- **The executor:** This entity is responsible for implementing the project.

1 – **The financial underwriter:**

Given that it has the responsibility (sometimes assisted by a financial backer) of financing the project, and that it is the principal beneficiary, the Municipality should take the role of project manager and hold decision-making power in all phases of the operation.

**Major actions to be taken by the financial underwriter:**

- Set up the Street Addressing Unit, staffing and legal status
- Choices made by the Street Addressing Unit must be approved throughout the operation, and in particular;
  - division of the town into neighborhoods
  - choice of a codification system
  - choice of zones to be addressed
  - choice of pilot zone
  - calls for bids: selection of enterprises.
- Begin with the pilot zone.
- Organize the monitoring of all activities and applications when preparing the legal status and functions of the street addressing monitoring body.

2 – **The concept developer:**

Project management should be assigned to a team brought together especially for the operation. Staff on this team may be from the technical services of the local administration, or:

- from a project office
- from a private consulting agency
- a “public” team brought together especially for the operation (the Street Addressing Unit).
The terms of reference for the Street Addressing Unit are as follows:
- raise public awareness of the street addressing operation
- prepare the codification and cartography
- prepare calls for bids for consultants and parties in the street addressing operation
- supervise street signposting and numbering
- supervise the census
- oversee the implementation of the computerized address index.

3 – Selection of associated services:

Internal and external services and concessionaries concerned by this operation must be selected.

Public services:
- the technical services of the local administration and in particular the highways services
- the taxation and land registry services
- the garbage collection services.

Partners:
- the water provider
- the electricity provider
- the telecommunications provider.

4 – A consultant:

External support should generally be provided to the local Street Addressing Unit to guarantee the rapid startup and the durability of an entirely new operation. This support can be provided in three areas:
- training of those accountable for street addressing, cartography and database management
- preparation of the evolution of the operation
- monitoring and inspecting the operation.

The need for this ad hoc support diminishes as the operation and its successive phases progress.

5 – The executors:

The executors will become involved only from the implementation phase of the operation. Local administration staff, or staff from another administration or from the Street Addressing Unit, may be responsible for aspects of implementation such as painting on numbers and names. When street plaques are manufactured, the executing enterprise may be nominated directly, or selected by means of international calls for bids. In the case of installation, it is recommended that a local call for bids be made.
Set up a Street Addressing Unit

The Street Addressing Unit may hold different forms of legal status (private, public, other bodies, integrated or external) but whatever the option selected, a project execution unit must be equipped and identified.

Unit setup is carried out in several stages:
1 – define the legal status of the Unit
2 – define the roles of members of the Unit
3 – recruit staff
4 – train staff
5 – provide the necessary premises and materials.

1 – Define the legal status of the Unit

The Unit remains under the municipal authority to which it must render accounts and supply information of the advancement of the project and associated works. The Unit is directed by a Unit Leader -- the direct interlocutor of the town’s services management office that is responsible for street addressing.

Due to the relative brevity of the implementation phase and to the need to maintain it at a sustained pace, different solutions may be considered according to the individual case, including that of entrusting this task to a private entity. Whatever the solution adopted, financial autonomy is particularly important. The Unit should have its own operating budget in order to be able to ensure that staff wages are paid, and that materials and travel costs are met.

Although it needs to be autonomous, the Unit represents the municipal authorities, in particular during the implementation phase. This accountability is indispensable if the Unit is to remain credible in the eyes of the public, which would make its work much easier.

Relations with the municipal authorities are clearly defined in a procedures manual that lists tasks, responsibilities and inspections, and to which the Unit Leader will refer.
II – Define the role of each staff member

Each of the Unit’s staff members will carry out clearly defined tasks.

The work of the Unit can be divided into three principal and complementary steps:
- the formulation and preparation of the project, and its monitoring
- execution and implementation
- activities monitoring and maintenance.

Staff responsible for formulation will be recruited for the duration of the operation when it is first launched, ensuring that the job will be monitored until completion.

Staff responsible for execution of the operation, i.e., technical teams, will be mobilized only during the implementation phase.

When the project is completed and needs only to be monitored and maintained, Unit staff will be considerably reduced, and perhaps even limited to a single staff member.

Regular staff members are as follows:
- Unit Leader
- deputy Unit Leader
- draftsman
- secretary.
1 – The Unit leader / coordinator:

In addition to her/his role as principal liaison with the authorities and the technical services, the Unit leader has a very important organizational and managerial role to play. Her/his principal functions are as follows:

- prepare decisions to be submitted to the works manager, and to subsequent meetings;
- provide information on progress of the various tasks and any difficulties encountered;
- prepare a media campaign, submit directions? points of reference? (orientations) for decision;
- prepare dossiers for calls for bids, and organize the analysis of bids;
- organize the work of teams on the ground;
- ensure the supervision of the various operators;
- prepare agents’ wages;
- supervise the execution of the works.

2 – The deputy Unit leader:

The deputy leader assists the leader and is responsible for the installation of signposts and street plaques, and for cartography.
Her/his functions are as follows:

- verify street by street that the base map (to the 1/10,000th) is accurate and see that the draughtsman makes any corrections required;
- identify the location of street plaques and signposts on streets to be signed, in line with the plan prepared by the Unit leader; in cooperation with the draftsman, prepare the street sign map to the 1/2,500th which identifies the locations where signposts and street plaques should be installed;
- on the basis of her/his observations, draw up a list of existing street plaques and of those to be prepared by the enterprise and submit the list, and the street addressing map to the Unit leader for approval;
- provide guidelines for the draughtsman for drawing up the street index;
- verify that the street plaques and signposts provided by the enterprise are consistent with the order submitted;
- verify that the installation of signposts and street plaques is consistent with the order submitted;
- assist the leader of the team responsible for numbering entryways, and verify on the map to the 1/2,500th that numbering of concessions is correctly carried out.

3 – The technical team

In a large town, the Unit may have six or seven street addressing teams working on the ground simultaneously at the most active periods of the street addressing operation. The teams might typically comprise:
- a team leader
- a topometrist (quantity surveyor)
- two painters
- laborers
- census-takers.

The composition of the team is flexible and may be added to or modified as necessary.

This team will carry out the entryway numbering and the census. A topometrist measures distances, the painters paint the numbers on the entryways, the laborers assist the painters by carrying their equipment, and the census-takers carry out an urban census, noting the position of all urban equipment and objects, then locate and describe all economic activities.

The team leader:
The team leader is responsible for entryway numbering, and for transferring these onto the map to the 1/2,500th. (S)he:
- identifies on signposted streets the origin and direction of entryway numbers;
- prepares the required elements for installing or inscribing the concession numbering;
- directs the numbering team on the ground;
- directs the draughtsman so that the essential elements of this numbering are carried on to the map to the 1/2,500th.
III – Constitution of the team, recruitments and profiles

The team responsible for applying the street addressing should be selected and already operational as early as the pilot operation phase.

1 – The unit leader
The unit leader is a qualified management employee, with the following qualities:
- strong management skills
- team-leading capability
- qualified in cartography and in using maps
- sufficient knowledge of computers to direct associated tasks.

Topographers (or geometricians), engineers or architects have proven to be the best suited to the requirements of the units during the phase when the street addressing operation is launched and implemented.

2 – The deputy
The deputy should display the following qualities:
- good knowledge of cartography and computers
- good knowledge of the town.

Topographers, senior technicians or street surveyors would seem to be the best suited to this position.

3 – The technical team
The team leader is generally a topography technician. (S)he is hired following a test of her/his knowledge of the town, knowledge of and reaction to the work to be carried out, map reading capabilities, etc.

As an example, the team engaged for the street addressing operation in the town of Doloba comprised the following:
- team leader a topography technician
- topometrists diploma level
- painters able to read and write
- laborers without formal education.

For Doloba, the topometrists were initially selected from municipal officers (chainmen, assistant geometricians), then students trained on the job carried out the second part of the street addressing operation.

IV – Training Unit staff

To become truly operational, Unit staff need to be trained in the techniques of street addressing and in the use of the relevant software.

Training varies depending on the level of staff:
The Unit leader and her/his deputy are trained in general street addressing techniques, cartography, the use of computer material and software, and management.

The technical teams are trained in the principal objectives of the street addressing operation, the use of technical equipment for numbering entryways, measurements, and census-taking.

V – Providing premises and equipment

The Street Addressing Unit should be housed in its own premises, with a minimum of technical and computer material.

The following materials are required:
- all the necessary computer equipment
- service vehicles
- consumables
- miscellaneous.

The computer equipment used to provide street addressing to the town of Doloba is as follows:

Hardware:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentium 350 computer</td>
<td>2</td>
</tr>
<tr>
<td>21” screen</td>
<td>2</td>
</tr>
<tr>
<td>NB laser printer</td>
<td>1</td>
</tr>
<tr>
<td>Color printer</td>
<td>1</td>
</tr>
<tr>
<td>AO Tracer</td>
<td>1</td>
</tr>
<tr>
<td>CD ROM Engraver</td>
<td>1</td>
</tr>
<tr>
<td>Thyatron Inverter</td>
<td>2</td>
</tr>
<tr>
<td>Scanner</td>
<td>1</td>
</tr>
<tr>
<td>Computer memory card</td>
<td>4</td>
</tr>
</tbody>
</table>

Software:
- Technical design software
- Design software
- Photo processing software
- Database
- Word processing software

The selection of this software is very important if graphics are to be printed and published.
Questions

Is it possible for an entity other than the local administration to be project manager?
Yes, it could be a district, a community of municipalities, or other.

Can the Unit be private?
Yes, when project management is delegated, but under the supervision of the local administration.

Who/what is in charge of the Unit?
There are several possible answers:
- the local administration
- the technical services
- a monitoring committee.

Who controls the financing of the Unit?
Finances may be controlled by one or several of the following entities:
- the financial backer
- the financial services of the local administration
- a private office (auditing, accounting)
- a technical consultancy agency (external).
The data sheets

| The 12 data sheets describe the project and its different alternatives, step by step. |
|---|---|
| 1 | Preparing the cartography base | p. |
| 2 | Identifying zones to be addressed | p. |
| 3 | Selecting the codification system | p. |
| 4 | Establishing the basic street addressing map | p. |
| 5 | Developing signposting maps | p. |
| 6 | Instituting a public awareness campaign | p. |
| 7 | Addressing a pilot zone | p. |
| 8 | Calling for bids and analyzing responses | p. |
| 9 | Installing signposts and street plaques | p. |
| 10 | Numbering entryways and carrying out the baseline census | p. |
| 11 | Developing an address index/database | p. |
| 12 | Preparing and publishing the final street addressing map | p. |