



Summary of Notes from the LBCS Workshop Chicago, January 19-20, 1997

The following is a summary of the discussions at the workshop. It is organized by the major topic areas identified in the workshop discussion paper. The primary objectives of the workshop were to obtain comments for developing:

- a conceptual framework for the classification system;
- a conceptual framework for the coding system; and
- the scope of definitions, types of case studies, topics for working papers, and tools necessary for a classification standard.

The following comments should be reviewed in the context of the working paper.

Background Issues

1. The 1965 Standard Land Use Coding Manual (SLUCM) provided a coding system, not a classification system. It was developed for land-use surveys required under the Urban Renewal Administration's (now Dept. of Housing and Urban Development) Urban Planning Assistance (701) program. This program reimbursed state and local planning agencies for conducting comprehensive plans. Al Guttenberg's prior academic work provided the impetus to develop SLUCM. The key to the organization of SLUCM categories was based on the range of "economic activities" a property is used for.
2. The computerized data banks that were being developed in the 1960s wanted to use SLUCM as the baseline coding system for land-use data. This standard was modeled after Harland Bartholomew & Associates uniform classification system. They employed it in all their projects. It provided an easy way to collect, analyze, and compare land-use data because the firm never deviated from the manual. The case for a uniform classification standard, such as SLUCM, was entirely based on the need for comparability of land-use data.
3. SLUCM's primary purpose was "to establish an extensive system of categories that would identify each land use activity that could also be numerically coded." It is not a classification standard, but a dictionary that merely provided "headings" and "subheadings." The base categories and coding methods in SLUCM enabled the

development of additional categories that were more pertinent to a specific application. SLUCM's purpose, therefore, was to provide for a system that allowed deviation in categories, coding methods, and the level of details that could be attached to a land use. SLUCM was a system that recognized the importance of deviating from the standard.

4. Although SLUCM was just a coding system, it was, nevertheless, a big step toward uniformity in data collection and analysis of land uses. Local communities no longer perform detailed activity analysis for which a SLUCM-like coding system might be practical. Communities now require grouping of land uses that are functionally related. Most local land uses, for example, are graded on their nuisance value. The emphasis is on separation of uses to minimize nuisances. Also, local land-use categories are very heterogenous. They do not use or apply these functional characteristics uniformly. For instance, residential uses may be the most important, while an activity-based system, such as SLUCM, does not reflect this. A national effort, such as LBCS, therefore, cannot be adapted to all the functional needs of local planning.
5. For a useful system, then, it is important that a mix of characteristics is incorporated and not just the one characteristic (economic activity) that was used in SLUCM. The system should also allow for any new functional issues that may arise in future.

Issues Related to Definitions

6. The "activity" coding of SLUCM is based on "economic purposes" of the land use. It does not suggest the actual (concrete) physical activity. For instance, the "economic purpose" of a use might be "governmental," but the actual activities might be an office, a utility, or a jail. Therefore, we could more appropriately call the "activity" characteristic coded in SLUCM a "function" of the land use.
7. The difference between "activity" and "function" may be significant sometimes, but not in others. For typical planning applications, some activity-based categories and function-based categories might be identical. Nevertheless, at detailed levels, the differences could create inconsistencies in classifications. For instance, a typical office space might be classified as "office activity" under an activity-based classification system but will require additional information about the activity to reflect accurately the economic function of the office (is it a lawyer's office, a nonprofit organization, or a corporate office of a manufacturing company). Likewise, the economic function of a coffee shop is "business or retail" but the activity is "eating" or "drinking."
8. Activity means what actually takes place on a parcel of land, as opposed to the type of structure on the parcel and its use (economic function of the parcel). Activity embodies the physical or observable relationships among persons, goods, and vehicles. Describing activity in words that are already associated with an economic function is difficult. Terms like office activity, store-type activity, storage activity, eating and drinking, residing, school activity, mass assembly and spectatorship, pedestrian movement,

vehicular movement, and vehicular parking are a few examples of activity-based categories.

9. Another distinction put forth was that “function” embodies purposes (economic or otherwise) and “activity” does not. This distinction becomes less useful for some common land uses, such as a play lot, or a church, or a Native American burial/religious site. It was, however, suggested that a combination of the concepts of activity and function may suit some categories at some levels of classification, and that one could make the classification system deviate from the conceptual consistency only for such levels. One compound descriptive term put forth was “socioeconomic enterprise” to refer to economic functions (relationship to money).
10. The reasons for keeping some distinction between “activity” and “function” in a classification system may not be as important at the data collection level as it is at the plan or policy level. Although merging of the two has been invariably occurring since the 1930s, it is the responsibility of the planning profession to differentiate between “activity” and “function” for clarity in planning discourse. For example, how do we capture noneconomic transcendental functions?
11. Terms like commercial and industrial are analytically treacherous (read Kevin Lynch) though they are commonly used on maps and other nonanalytical contexts in planning.
12. A typical land information system contains land-use characteristics, ownership characteristics, building/structure characteristics, site characteristics, land and building values, etc. Land uses are just one component or attribute used in a land information system. The classification of land uses will also depend on the unit of measurement in the land information system. For example, if the data is coded for each floor of a building, the land-use categories required will not necessarily serve a parcel-based system adequately. The scale of “unit of data” will largely, therefore, affect the land-use characteristics to be studied.
13. Ideally, categories should reflect independence from scale. It is, however, not an obtainable objective if LBCS is to be a universal classification that can be used for a multitude of planning applications that frequently derive data from a variety of scales.
14. The LBCS model should not just be about “activity” or “function” based, but also include resource-based categories (unlike SLUCM), such as those often used in NEPA, Superfund, GAP, and other resource-based programs.
15. LBCS is a classification standard and not a coding standard. The figure 1, on page 5 of the 1965 SLUCM report shows a list of sample characteristics used to describe land uses. While the highlighted box, “Activity” under the Space Use, is the scope of SLUCM, the diagram is an outline for a data model for land information. LBCS is not concerned with the data model for land information. It is concerned with classifying characteristics about

- land uses that may be ascribed to units of measurements (records of parcels, pixels, land units, or buildings) in a data set.
16. Develop an initial list of land uses from the updated SIC and NAICS for “function”-based categories. The relationships between categories and uses must not be defined or influenced at this stage since these depend on purpose.
 17. The term “use” is becoming less and less meaningful (or useful). Employing the term “use” is biasing a whole set of terms and relationships. LBCS should be concerned about relevant attributes that recognize established purposes. Common terminology (i.e., terms not describing uses or activities, but used in planning profession) should also be defined (as in a glossary).
 18. Since local zoning codes are heavily loaded with terms that can lead to great complexity, a thesaurus-like system may be more useful than a simple glossary. The thesaurus should contain links to other related terms, narrower terms, or broader terms. (Similar to the “see also” or “related to” techniques in a library cataloging system.)
 19. The words and terms (used in local comprehensive plans and zoning ordinances) are important since they become a map when expressed in pictorial or graphic format. Open space, for example, is a description laden with meaning that is not universally shared. On a similar note, SLUCM categories imply that there is no “use” until “man” has intervened.
 20. Lack of a use, or “uselessness,” does not imply that the land is not valuable. Since planning is concerned with value of land, classifying values should also be an integral part of LBCS.
 21. Defining all land uses is impossible. There is a limit to what can be done. However, the standard should be capable of accommodating new uses as needs, perceptions, uses, technology, and applications change.
 22. The term “land use” also requires a definition.

Developing Classification Systems

23. The LBCS model should be dynamic and not static. That is, the categories should be flexible enough for incorporating other characteristics or “dimensions.” The standard should generate a series of “templates” for a variety of applications. SLUCM is a static template. LBCS should provide a selectable “window” from a universe of attributes to generate categories and land uses. This approach to an LBCS model will result in a higher order concept based on relationships in land-based attributes. Such a model, in theory, would be able to incorporate all the various classification schemas that are

currently in use (or those that might come in the future). The “model of models” approach is fitting for a “national” land-based classification standard.

24. LBCS should not reinvent the wheel. It would not be useful just to update the list of land uses in the 1965 SLUCM. This effort should aim for a dynamic object model that will exploit the opportunities offered by technology.
25. The Guttenberg model for describing categories is a good starting point. Use the “referential,” “appraisive,” and “prescriptive” modes to distill the essential categories necessary for planning applications. The planning profession has many nouns and verbs but not enough adjectives. Planners need more specific terms to be able to do predictive work. We need to develop such descriptive terms if LBCS is to be inclusive.
26. Start with NAICS categories for an economic dimension and refine them to suit the SLUCM activities. Reconcile the changes to SIC since SLUCM and incorporate all the upcoming changes to NAICS.
27. Other land uses to include: aquaculture rights in coastal communities and urban forestry.
28. Other land rights issues to consider: distinction between habitats (forest preservation versus parks).
29. Categories based on densities ought to be reconsidered. Density is a measurement that is dependent on various other attributes of the land information system. For comprehensive planning applications, however, describe methods to deal with density-related categories.
30. Categories based on scale are crucial for adoption at various levels--note that, at the local level, “parcel” means everything and “pixel” means nothing.
31. Produce a matrix of optimum classification whose intersecting cells represent the cross-referencing and cross-classification employed by planners in applications. Users can assemble and disassemble the coding schema for such applications to and from the contributing component sources.
32. Highest possible level of detail must be classifiable at the site survey level. This may mean coding and classifying each individual use on every floor. Implication here is that some applications still require a very detailed “activity” level list of uses, as was done in SLUCM.
33. At the broadest level, data collected at the national level is generally aggregated or the scale of data acquisition at the source is very large (requiring fewer details).
34. Categories for urban and rural areas might be straightforward, but classifying at the edges requires consistency between urban and rural categories.

35. Time-based land uses--that is uses that are not static--will also require some form of categorization. (See time-shape in Guttenberg).
36. Consider categories based on the “external effect” of a land use. These effects could be based on duration of effect, the quality of effect, and the intensity of effect.
37. Include categories developed by other specialized groups, such as the International Council of Shopping Centers (which has a manual that classifies shopping centers).
38. Categories should also be conducive to performing fiscal impact analyses.
39. The categories, classes, and standards raised through LBCS should be viewed as an exercise in giving data a grammatical form.
40. The history of land-use classification can be traced to specific events or trends in the nation’s history. For example, with the onset of the Depression, land uses were geared toward productive and economic use of the great plains (mainly through farming). Likewise, conservation goals have evolved to preservation goals. The “suburban explosion” has brought forth a fusion of previously separate land-use categories (agricultural-residential, commercial uses serving rural activities).
41. Developing a standard like LBCS is similar to getting a new language adopted. Studying experiences, especially failures (like Esperanto), might provide some good lessons.
42. The following dimensions of land-use categories were discussed:
 - a. Activity type (what is going on)
 - i. Housing/households
 - ii. Commercial
 - iii. Industrial
 - iv. Recreational
 - v. Public
 - b. Activity Effect (external)
 - i. Traffic
 - ii. Odor
 - iii. Emissions
 - iv. Visual
 - v. Noise (sound)
 - vi. Technological hazards (radiation)
 - vii. No external effect (is also a valid option)
 - c. Building or Structural Character (an enclosed space or intended purpose of the structure)
 - i. Structure types
 - ii. Infrastructure types
 - iii. Condition of structures

- d. Site Characteristics (natural)
 - i. Topography (Slope/Aspect)
 - ii. Earth Cover (from FGDC)
 - iii. Size
 - iv. Natural Hazards
 - (1) Floods
 - (2) Fire
 - (3) Hurricanes
 - (4) Earthquake
- e. Purpose (Function) Type
 - i. NAICS+SLUCM+SIC categories and Social Classes
 - (1) Retail
 - (2) Wholesale
 - (3) Manufacturing
 - (4) Conservation
 - (5) Services
 - (a) Civic
 - (b) Religious
 - (c) Social
 - (6) Agriculture
 - (7) Public Administration
 - (8) Residential
 - (9) Arts, Entertainment, Recreation, etc.
 - ii. No function (is a valid option)
 - iii. (a list similar to NAICS broad industry groups)
- f. Legal Characteristics
 - i. Entitlement
 - ii. Ownerships (in addition to classes from FGDC Cadastral Standard)
 - (1) fee simple
 - (2) less-than-fee simple
 - iii. Leaseholds
 - iv. Easements
 - v. Public
 - vi. Private
 - vii. Nonprofit
 - viii. Regulatory Boundaries
 - ix. Combinations of the above
- g. Value Characteristics
 - i. Economic
 - ii. Social
 - iii. Archeological/Historical
 - iv. Environmental

Also see page 37 of Guttenberg, 1993, for Appraisive Measures.

Big Ideas*

- **Need for integration of theoretical concepts with the practice of planning concepts (feasibility)**
- **Need for multi-dimensionality (use, activity, functions, etc.)**
- **Need to have an overarching conceptual system that will allow “multiple views” and also provide categorically detailed coding**
- **Need to make the “views” of the classification system accessible and usable for a wide range of applications**
- **Need a standard that allows comparability, at a minimum, at the metropolitan level by providing “threshold levels” for various “views”**
- **Need for consistency of terms, categories, and application of the standard (replicability)**
- **Need for logical consistency is more important within a scale than across multiple scales**
- **Need independence from temporal measurements**
- **Need for comprehensive listing of land uses of all possible activities and coding methods**
- **Need for collapsability of categories into broader terms**
- **Need for consistent “rules of classification” for future changes**
- **Need for thesaurus format listing of terminology used in the standard**
- **Need for clearer, vertically consistent definitions of urban and nonurban uses (density as a key measure)**
- **Need a standard that is comprehensible to nonspecialists and truly user-friendly**
- **Need some independence from scale of application**
- **Need to recognize regulatory classifications (superfund, nonattainment, census definitions)**
- **Need for a land-use inventory guidebook**
- **Need for rules-based classification system with standard glossary**
- **Need to extend range of recognized users (beyond planners)**
- **Need to create training tools for migrating to new standards**
- **Need for illustrations of common usage conventions for color coding and graphical representation**

*As identified by the LBCS Workshop Participants

Working Papers and Case Studies

43. A paper describing all related classification systems--what exists, what is recommended, what is good and bad about each, etc. The related systems may include, FGDC, Remote Sensing, Cadastral, National Vegetation System, and International Council of Shopping Centers. This paper may also include comparisons of coding schemas. Identify areas of similarity and divergence, classes of users (diversity of groups), and overlapping categories (or dimensions).
44. A three-page white paper on the need for standardization and the concept of standards. This will advance the science and art of planning. It will also provide a base for the project.
45. A brief paper on the LBCS project to include an overview of its mission, problem identification, and rationale. People want to see the breadth of what is proposed.
46. Short paper on the conceptual issues related to the design of the data model for land information systems where LBCS is applied--to provide context to the standard.
47. A paper (not a short one) that illustrates how to integrate, aggregate, and normalize data from multiple coding schemes. This is to illustrate the art and science of planning data management.
48. A medium-size paper that outlines the metadata design. Focus on expediency issues with metadata.
49. A paper to describe the vision or plans for value-added services to facilitate implementation. This will provide comfort and sense of stability for LBCS and dispel the "yet another standard" attitude.
50. A comprehensive history of land-use classifications developed by the planning profession. On the lines of Guttenberg's papers and abstracts. This will provide some indication of what else might be looming that will require additional dimensions for categories.
51. Select case studies that are based on variety and applicability. The need for geographical variety need not constrain case studies. Look for variety of applications (the use of land information systems). Develop a set of criteria for selecting case studies. Use only real-life examples. Define the scope of case studies. Check for horizontal and vertical compatibility as a criterion.
52. Case studies should encompass cost-benefit issues--startup costs versus long-term maintenance of land information systems. Include plans/ideas for amortization of startup costs.

53. Case studies testing of the standard should proceed nationwide in a concerted effort across multiple jurisdictions. A comprehensive land information system setup costs \$100,000 to \$200,000 per jurisdiction at a minimum. A nationwide effort would cost \$30 million to \$50 million.

Key Issues Affecting the Adoption of an LBCS

54. APA must promote this standard extensively. It must be clear about the language of planning, the purpose of the standard, and benefits of the standard. APA must provide leadership for urban and nonurban applications.
55. The study must describe the end users beyond the typical planner. It must include interests represented by other organizations and industries, such as the Urban Land Institute, real estate industry, InfoTech Newsletter readers, the assessors, the emergency management professionals, different layers of departments within local governments, international council of shopping centers, environmental groups (those interested in habitat conservation).
56. The wider the audience, the more open is the standard.
57. Include MPOs and other regional planners. Do not rely on volunteers. Recruit actively. Wider participation will sharpen and provide more focus to the problems.
58. Reach the “techies” through URISA, APA InfoTech Division, etc. Use the conferences for sessions to elicit responses. LBCS Technical Advisory Panel setup and the mechanism for its participation should provide an organized feedback loop.
59. Promote stakeholder buy-in. But make sure that input from others is consistent. LBCS authors must take responsibility for maintaining consistency.
60. Think of marketing the standard to two sets of groups. The primary groups that should adopt the standard, and the secondary groups that could benefit from the standard, when adopted. Think of this as the “field of dreams” where “if you build, they will come.”
61. Promote the standard using the Web and let everyone comment, use, and play with the system.
62. Keep a record of distinctive benefits of using the LBCS standard. Let users contribute to it.
63. Work with GIS vendors to help create default templates on land-use classes to be included in their software. This template, or base template, should be the starting point

for developing a set of templates for various planning applications. Develop mechanisms for incentives and disincentives for widespread adoption of the standard templates.

64. Secondary sources of data will become increasingly important as technology permeates throughout the society.
65. HUD, DOT, and other federal agencies could provide funds for local data collection, when the standard is ready. These funds should help localities not only apply the LBCS standard, but also influence local land information systems development. Explore the inclusion of these prototype-building functions in a HUD bill or other related federal legislation.
66. Do not expose too much of the standard too soon. Deal with changes incrementally.
67. The 3C transportation program provided a good model for data collection but lacked a good method for continuing updates to the model. There were no long-term maintenance plans for the 3C data model.
68. Promote LBCS to be used as part of planning education in planning schools. Prepare a manual such as the one used by Prof. McDougal at CalTech. Publish the manual as a planner's primer with APA as the focal point of research--with or without funders, APA must be the focal point.
69. Use of LBCS by planning consultants around the country might make it initially more expensive for local planning departments, but the long-term benefits to the client far outweigh such expenses.
70. Publicize the national clearinghouse and database component of the project to solicit more input on the nature and function of the clearinghouse.
71. Recognize that the adoption of the standard would be much longer than the development of the standard.
72. Explore the feasibility of an extended workshop that would invite all the stakeholders into one room.
73. Publish articles in professional journals about this project that provide a concise definition of the problem.
74. For local government acceptance, the format of the standard will be crucial. The conversion software must be easy to use and flexible enough to incorporate changes locally.
75. Explore providing conversion services (at a cost) through APA, since APA, as a service provider, is best suited to do this.

76. Develop some type of built-in evaluation that has criteria to detect needed changes to LBCS to keep it current. (Do not make it easy to change, yet change must be possible.)
77. Show how LBCS is applied in both digital and manual applications. Include examples of how to move from manual to digital processes.
78. Work can begin on a prototype to demonstrate the database design for a land information system.