

## Mixed Use Space, a Pattern to Achieve a Dynamic Urban Space (Case Study: Soltanie)

Faeze mehri

Urban Planning and Designing Professor, Islamic Azad University of Zanjan, Iran  
eliza.urban@gmail.com

**Abstract:** Mixed use as a several destination in one place, is a key element that has many advantages in social, economical and physical aspects. Mixed use is an element of rehabilitation in the developed regions, economic mobility, and one of the best methods in order to join different types of residential in small scales. But builders and developers underestimate opportunities and advantages of mixed use developments. Mixed residential developments that have increased since ten years ago, devote only a little percent of new residential developments. This paper intends to obtain some objects like achieving a pattern of sustainable design in urban space, managing brown fields and revival of social life increasing environment quality, economic mobility and managing brown fields by using mixed use theory in city of Soltanieh. This paper presents suggestions in the fields of environment quality, sustainable design, economic and social mobility by surveying viewpoints, different aspects of mixed use development, residents' opinions, city's existing condition and suggested sanctums. It is necessary to mention that Soltanie is one of Iran's cities located in the province of Zanjan.

[Mehri F. **Mixed Use Space, a Pattern to Achieve a Dynamic Urban Space (Case Study: Soltanie)**. *J Am Sci* 2012; 8(7):813-820]. (ISSN: 1545-1003). <http://www.americanscience.org>. 119

**Key words:** Land use- Zoning- Mixed use- Mixed use development- Sustainable development

### 1. Introduction

One of the most important challenges for urban designers and planners about the conditions of cities is changing cities main structure and initial form of some areas because of mismanagement, kinds of different pollutions and converting land uses or discharging them due to inhabitants' migration. In duration of time, they transform to problem able areas and free of residents. Unfortunately many residential areas are developed without any particular regard to their surroundings. This causes because of increasing reliability on cars.

On the other hand builders typically only build houses, while other developers specialize in commercial schemes, and investors like the security of investing their money in single uses—rather than in mixed developments—thus maximizing their profits and planners often like to zone and therefore separate, different types of uses so that conflicts of amenity do not occur (Biddulph, 2007: 131). So a city doesn't have seen as an active and energetic open system that reforms itself in order to responding the surroundings condition. Mixed use concentrated development, preferably near transit, is seen as a key “smart growth” tool to reduce auto dependence and preserve green space and natural resources. Today, much

commercial development is environmentally benign, and there are often advantages to locating different uses in close proximity (Metropolitan Area Planning Council, 2009: 1). So for achieving a mixed use balance between different needs of users and beneficiaries we require to present the alternative that can satisfy all beneficiaries and users also create desirable urban spaces. As a main problem of current cities and metropolises, is land leakage and its difficulties, one of the suitable options is a kind of using the space that encourages the commercial benefits and can be efficient in longer period of time. This spatial design pattern attains by mixed use theory.

In attention of the benefits of using mixed use theory and the location of Soltanie in the center of Zanjan- Hamedan (2 adjacent cities in Iran) pivot and touristic attractions recorded in the word heritages registry and the challenges of cultural heritages' sanctums we prospect by creating some mixed use spaces an attractive and dynamic environment can be created for residents and tourists.

### 2. Substantial subjects

#### 2.1. What is mixed use?

Traditional zoning was developed during a time when factories and many commercial uses were

noisy, smelly, and/or hazardous to the public. To protect public health and residential property values, early zoning focused on separating different uses and buffering them from each other to minimize nuisances. Today, much commercial development is environmentally benign, and there are often advantages to locating different uses in close proximity. Mixed use concentrated development, preferably near transit, is seen as a key “smart growth” tool to reduce auto dependence and preserve green space and natural resources. Thus many communities are turning to “mixed use,” which generally refers to a deliberate mix of housing, civic uses, and commercial uses, including retail, restaurants, and offices. Mixing uses, however, works best when it grows out of a thoughtful plan that emphasizes the connectivity and links among the uses. Results may be haphazard when communities simply enable multiple uses without providing guidance about the mix of uses and how they are spatially related. Mixed land use enables a range of land uses including residential, commercial, and industrial to be co-located in an integrated way that supports sustainable forms of transport such as public transport, walking and cycling, and increases neighborhood amenity (Metropolitan Area Planning Council, 2009: 1).

Figure (1): types of mixed use development



## 2.2. Mixed use development

A mixed-use development is not a standardized product form. It can differ in location because it can be built in an urban setting or a suburban setting. The density levels are generally higher in an urban setting but not necessarily. It can differ in relation to its surroundings. It can be a higher density infill project in an established urban setting or it can be a development in the growth corridor in a suburban setting. It can also differ in configuration (Joseph S. Rabianski & J. Sherwood Clements, 2007: 4).

**2.2.1. Mixed use development types:** Each MXD shall be classified as one of the defined mixed use development types based on its size and location. Mixed use design standards are applicable based on

mixed-used development type. There are three mixed-use development types:

**a. Mixed use corridor development:** A mixed use corridor development is an MXD development that is no larger than 10 acres in gross land area. A mixed use corridor development shall be located within a vision master plan node or shall abut a thoroughfare, super-collector, or collector.

Figure (2): Mixed use corridor development



**b. Mixed use center:** A mixed use center is an MXD development that is larger than 10 acres but less than 40 acres in gross land area. A mixed use center shall be located within a vision master plan node or shall abut a thoroughfare, super-collector, or collector.

Figure (3): Mixed use center



**c. Mixed use neighborhood:** A mixed use neighborhood is an MXD development that is no less than 40 acres in gross land area. A mixed use neighborhood may be located at any location within the city (urban design + architecture, 2009: 10).

Figure (4): Mixed use neighborhood



## 2.3. A mixed-use development can take four general forms:

- First, it can be a single high-rise structure on a single site that contains two or more uses integrated into the structure. Typically, this form of the mixed-use development has retail on the street level with offices over the retail and either residential units or hotel space over the office space.
- Second, it can be two or more high-rise structures on a single site with each structure holding a different

use. The office building, residential tower (condominium ownership) and a hotel are the typical combination. Retail, but different forms of it, can also exist on the ground levels of each use.

- Third, the mixed-use development can be a combination of different low rise structures on a single site with retail on the ground level with residential units above in one structure and office space above in another structure.

Fourth, it can be a single mid-rise structure on a single site typically in an urban setting with retail on the ground and residential or office above depending on the developer's insights and opportunities (Jill Grant, 2004: 4).

#### **2.4. What are the benefits of mixed use development?**

Different communities choose mixed use for different reasons. Some see it as an excellent way to incorporate a mix of housing types on a small scale while enhancing traditional town character. Others see it primarily as a vehicle for revitalizing struggling areas and spurring economic development. Still others use it to create or enhance village centers. Listed below are some of the many benefits of mixed use development (AGDHA '2009: 2).

- Spurs revitalization
- Encourages high quality design by providing both greater flexibility and more control
- Preserves and enhances traditional village centers
- Promotes a village-style mix of retail, restaurants, offices, civic uses, and multi-family housing
- Provides more housing opportunities and choices
- Enhances an area's unique identity and development potential (e.g., village centers, locations near bike paths, or "gateway" areas that announce a community's strengths)
- Promotes pedestrian & bicycle travel
- Reduces auto dependency, roadway congestion, and air pollution by co-locating multiple destinations
- Promotes a sense of community
- Promotes a sense of place
- Encourages economic investment
- Promotes efficient use of land and infrastructure
- Guides development toward established areas, protecting outlying rural areas and environmentally sensitive resources
- Enhances vitality
- Improves a municipality's commonwealth capital score

- Embodies smart growth
- Increases revenues
- Increasing economic vitality and expanding economic market opportunities ([minneapolisfed.org](http://minneapolisfed.org)) .
- Supporting long-term economic stability by providing tax base and jobs for communities, building and maintaining markets for businesses, and enhancing investment potential for lending institutions and investors (the same).
- maximizing use of public investment and infrastructure, i.e., roads, sewer, water;
- Maximizing use of land and supporting sustainable development.
- providing affordable and market-rate housing options; and
- Encouraging historic preservation, reuse or redevelopment of existing buildings (Metropolitan Area Planning Council, 2009, 3).

#### **2.5. Where are mixed use opportunities?**

- Downtown
- Commercial Centers
- Employment Centers
- Main Streets
- Corridors or Nodes in Neighborhoods
- Transportation-Efficient Development (Community Design Committee, 2008: 4).

#### **2.6. Mixed income:**

- Mixed use development should include mixed income housing, providing adequate housing for low and very low income people.
- All new mixed use development should include provisions for low income people whether through incentives, greater cooperation between the public and private sector, regulation, zoning, and/or creative financing.
- In addition to providing affordable housing in mixed use development, it is important to develop mechanisms to ensure long-term affordability (<http://www.tjpc.org>).

#### **2.7. Facilities and services mix:**

A diversity of people needs a diversity of businesses, services and facilities. Business diversity that corresponds to social diversity is most likely localized, or at least small in scale. While it may make sense to talk about economic diversity that fosters innovation and thrives on creativity in the sense of a 'creative economy', such diversity needs to be meaningful to individuals rather than corporations and city politicians.

- The stylistic implications of this kind of mix can be complicated. On the one hand, architectural variety is valued as a way of supporting diversity.
- Mixed businesses for a diverse neighborhood need to be something more fundamental. In addition, the composition of the mix matters. Uses should compel each other and be active at different times of the day.

One way to support mix is to find areas with high levels of social mix and make sure these areas are well served by public space and/or commercial and other types of non-residential facilities (Talen, 2008: 115).

### **2.8. Ten themes: a framework for mixed-use development**

- Evaluate the market
- Identify an appropriate location
- Determine the mix of uses and orientation (vertical or horizontal)
- Assemble the development team
- Understand the government role
- Obtain necessary financing
- Address planning and zoning issues
- Incorporate demographic trends into design
- Consider affordable and other housing issues
- Tackle redevelopment or reuse challenges (minneapolisfed.org).
- Control density
- Present standards and suitable proposals in context of site and buildings design
- Increase commercial centers and their complimentary residential uses (www.lcd.state.or.us/tgm).

### **2.9. Master condominium in mixed use constructions**

Mixed-use developments create many interesting and vexing challenges for real estate lawyers. Traditional property boundaries do not exist in projects where multiple owners are stacked vertically above each other and share common facilities. Real estate lawyers must exercise particular care and creativity in structuring these compact and dense communities to ensure that residential, office, and commercial uses co-exist and thrive as vibrant communities. Lawyers can structure mixed-use developments in several different manners. Some possibilities include the following:

- Single condominium;

- Master condominium with master units that can each be a separate sub condominium structure;
- Master property owners association with separately individually owned parcels; and
- Multiple air rights condominium parcels subject to a reciprocal easement agreement.

Each of the foregoing legal structures has its own advantages and disadvantages.

Although not appropriate in every situation, developers are increasingly utilizing master condominiums to structure mixed-use communities, particularly communities with dense vertical structures (B. Curry, 2008: 4).

#### **2.9.1. WHAT is a master condominium?**

A master condominium is a type of a condominium legal structure. A condominium must contain separately owned units and common elements owned and used collectively by the unit owners and occupants. The property comprising a condominium may be any real property or interest in real property. For example, in addition to traditional residential buildings, boat slips, hotels, and parking decks can be structured as condominiums.

A master condominium is merely a condominium structure which permits units within that structure to be submitted to one or more separate condominiums. A master condominium structure is simply a structure that permits the creation of condominiums inside an existing condominium.

An example of a common master condominium is a vertical mixed-use structure.

Land assembly and ownership is fundamental as a basis for large scale master planning and can be a significant barrier to development of any kind. Control of land through ownership can have a greater influence than planning control (the same).

### **3. Studying the existent condition of Soltanie**

#### **3.1 The special characteristics of Soltanie**

Soltanie as a 700 years old city contains some valuable historical heritages which are well-known in the word. It has some considerable international cultural attractions and natural touristic potentials. It is located in the center of Zanjan touristic region. The dome of Soltanie in addition of other natural and artifact heritages' potentials, creates a set of touristic spaces. The architecture style of constructions and spatial structure are in the coordination of continent, nature and ancient architecture. Soltanie has violent mixture between constructions and the limits of

monuments' barrier (Engineers Consultant Sharmand, 2006).

Surveying the existent condition of Soltanie indicates that city and its surrounding region has some considerable potentials. But it cannot be able to use them to effect residents' income. The lack of infrastructures, facilities and necessary installation causes this important economic department inactive in the city's economic sector.

The social structure of the city contains people with same language and religion. 80 percent of residents are the owner of their houses and there aren't any heterogeneous constructions and social segregation. Increasing the unemployment rate and immigration of the young people to other cities are the important events happened since ten years ago. The capitation of some existing land uses can't be able to provide the residents and tourists' needs. The texture of the city isn't integrated and the most of the buildings are destructured with brittle materials.

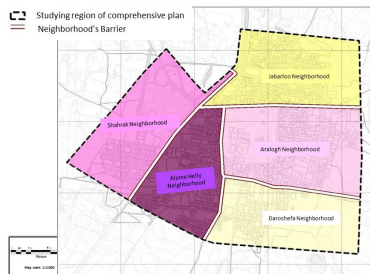
Figure (5): The different textures of Soltanie



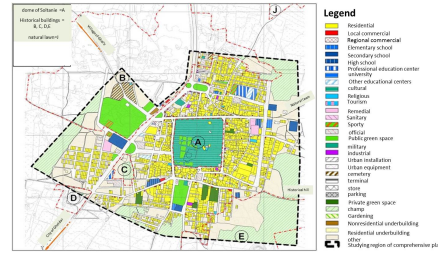
Figure (6): The dome of Soltanie



Map (1): Neighborhoods of Soltanie



Map (2): Land uses of Soltanie



**4. The method of sampling and approving hypothesis**

There are five neighborhoods with different distribution of facilities, brown fields and old textures in Soltanie so the method of stratified random sampling has been used.

In this method the residents have been divided to several social classes in accordance of their characteristics. The survey population has been selected proportionally from all of the categories. Each neighborhood makes a class and in conformity with the percent of its population in whole city's population (population size= 6458) encompasses appropriate number of the questionnaires. The sample size and number of the questionnaires which had to be filled by residents accordance of beneath formula is 322.

$$N = \frac{t^2 pq}{d^2}$$

$$t = 1.96$$

$$70\% = (\text{Percent of attribute disperse in the society}) p$$

$$30\% = (\text{Percent of people without the attribute}) q$$

The analysis of hypothesis has been done by SPSS software (Statistical Package for the Social Sciences). Because this research is in the sort of correlation researches so Pearson correlation test is used. By calculating the correlation coefficient the existence of meaningful relationship between dependent and independent variables can be approved.

Hypothesis 1: By using mixed use theory we can achieve a sustainable design pattern in urban spaces.

Table (1): Pearson correlation test to prove hypothesis

	Mixed use	Sustainable design
Pearson correlation coefficient	1.000	0.172**
Mixed use significance level	0	000
frequency	322	322
Pearson correlation coefficient	0.172**	1.000
Sustainable design significance level	000	0
frequency	322	322

\*\* Correlation is significant at the 0.05 level (2-tailed).



### Hypothesis 2: Using of mixed use theory in urban space causes revitalization in social life.

Table (2): Pearson correlation test to prove hypothesis

	Mixed use	Revitalization of social life
Mixed use Pearson correlation coefficient	1.000	0.391**
significance level	0	000
frequency	322	322
Pearson correlation coefficient	0.391**	1.000
Revitalization of social life	000	0
significance level	322	322
frequency		

### Hypothesis 3: Designing brown fields by using mixed use theory creates economic mobility.

Table (3): Pearson correlation test to prove hypothesis

3

	Mixed use	Economic mobility
Pearson correlation	1.000	0.204**
Mixed use coefficient	0	000
significance level	322	322
frequency		
Pearson correlation	0.204**	1.000
Economic coefficient	000	0
mobility	322	322
significance level		
frequency		

### Hypothesis 4: Mixed use theory is a solution to encourage the quality of urban space.

Table (4): Pearson correlation test to prove hypothesis

	Mixed use	Increasing urban space quality
Mixed use Pearson correlation	1.000	0.118**
significance level	0	000
frequency	322	322
Pearson correlation coefficient	0.118**	1.000
significance level	000	0
Increasing urban space	322	322
quality		
frequency		

In accordance with above statistical tables resulted from Pearson correlation test, correlation coefficient between utilizing of mixed use as an independent variable and achieving a sustainable design pattern, revitalization of social life, economic mobility and increasing urban spaces quality as dependent variables sequentially are 0.172, 0.391, 0.204 and 0.118. These numbers indicate a positive correlation between variables that means by increasing the utilization of mixed use theory, social and economical mobility, quality of urban spaces and achieving a sustainable pattern will be increased and accessible. Meaningful coefficient is 0.00 so all of the hypotheses are proved with 95 percent of confidence level.

### 5. Proposals

In consider of conclusions gained from the residents' opinions, analyzes of existent situation, benefits of mixed use development some proposals in the contexts of sustainable design, social life, environment quality and economic mobility are presented to lead Soltanie to its determined vision.

Among 322 number of responders 53% are men and 46.6% are women. 21.1% are under 20 years old people, 48.8% between 20- 30 and 30.1% are above 30 .13.4% express that they don't have easy access to activity and work places in neighbors and city center. 14% says that there isn't different options of transportation system and appropriate relationship between work, life, green and public places. 50% of responders drive their own cars to different places. 88.9% of responders are agree with utilizing of natural landscapes in order to create leisure and touristic spaces.

Achieving efficiency, management, square devotion of resources, supporting of social and economic incorporation are some of sustainable development objects. 69% of responders are agree with building affordable residential units and 16% are disagree with using of ancient buildings to construct places for residents and tourists in order to maximize using of brown fields and ancient buildings and have a massive planning to maximize efficiency of using lands and infra structures.

25.8% of responders imply there isn't a suitable dispense in commercial and official land uses in different neighbors. Above 50% of people are agree with locating activity and life places near each other. There is a lack in some facilities like entertainment

places for children, medical centers, parks, offices, hotels, restaurants, banks. Only 2% of responders are disagree with creating some places like markets to sell agriculture crops, handmade crafts, local foods and clothes. There is a brown field in entrance of the city that has a potential to build weak constructions which are appropriate with city's architectural style. Other people who don't want to stay in city will be able to buy crops without entering the city.

In accordance of city's existent condition there are some suggestions in four different aspects containing sustainable urban design, social life, environment quality and economic mobility.

**5.1. Sustainable urban design**

- Use brown fields, old buildings and compact planning in order to maximize the utilization of lands and infra structures.
- Provide a diversity in the public transportation options and pose buses as a suitable opinion in public transportation system.
- Construct mixed uses in the near of public transportation stations and along bus roads.
- Create some cycle roads along the main streets and provide their parking spaces in the main roads and city centers.
- Use traffic slowing technics like parallel parking in the arterial roads.
- Consider reserving some cars to decrease the parking request especially in main structures.
- Conserve the city's natural and vulnerable lawn ecosystem.
- Emit some adverse uses like cemetery to appropriate places in the suburban and transform them to some compatible uses.
- Conserve and reutilize the city's cultural and historical monuments.
- Aware people about the natural sources and the way of their conservation.

Figure (7): Natural grass of Soltanie



**5.2. Social life**

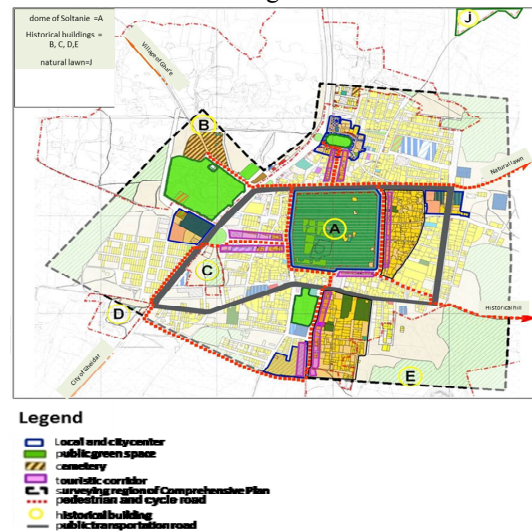
- Increase connectivity between constructed places, the cultural heritages and natural systems.
- Consider varied activities, cultural sport and art events in public spaces in order to attract people.

- Create some easy access spaces which are safety and have got necessary facilities for the children in local wide.
- Identify some new land uses to increase the activities work in the length of a day and in day off for different ages and interests in the ground floor units along the mixed use centers and corridors.
- Use conveniences in appropriate places along the streets to create some public spaces.
- Place some eating and drinking facilities in the near of public squares to utilize the outside open spaces potential to have food.
- Integrate the city's neighbors in order to increase the spatial structure and local characteristics.
- All mixed use buildings should be accessible from pedestrians in the public spaces and streets.
- Combine the different types of buildings and land uses to create diversity in income level, type of life and activity spaces.
- Create diversity in the land use, size and type of buildings in the blocks of old textures.

Figure (8): varied activities in public spaces



Map (3): Suggested pattern in the context of sustainable design and social life



**5.3. Environment quality**

- Create clear accesses with integrated spatial structure and suitable views to the center points.

- Create a view to historical and monumental buildings through direct roads
- Integrate the attractions by constructing some roads and corridors in the city wide
- Alter or create local and town centers in order to locate tourism services
- Create a local mixed use center in order to dispense some services in consider of the residential neighbor development pattern
- Locate parking space in an easy accessible place
- Use existent main architectural styles in the region to choice the best architectural styles for mixed uses.
- Create strong connectivity among internal commercial uses and near outside spaces.
- Land scape in the setbacks, open spaces, squares and parking space to create more attractive places for residents, employers and others.
- Chang the type of trees in the blokes in order to create diversity in the neighbors and mixed corridors.
- Use clear and legible riding signs for riders and pedestrians.
- Consider diversity in existing and new open spaces in city wide.
- Locate loading stores in a place with least negative effects on residential uses.

#### 5.4. Economic mobility

- Establish tourist and scientific tours to utilize the city's attractions.
- Increase the career skills of possess in tourist department
- Consider some places in order to sell local goods and services to visitors
- Use economic development incentives like tax discounts.
- Increase affordable residential units for low income people in the old textures.
- Invest in the necessary small commercial units for residents and tourists.
- Use public spaces as an important tool in design to increase the mass of selling in the adjacent commercial uses.
- Create some changes in the adjacent ground floor commercial units specially ones locate in a building for more clarity like changing the ground floor materials, type and figure of doors and windows.

Map (4): Suggested pattern in the context of environment quality and economic mobility



#### References:

1. Australian Government Department of Health and Ageing, 2009, Design Principle- Mixed Land Use <http://www.healthyplaces.org.au>
2. B. Curry. L, February 29, 2008, STRUCTURING THE MIXED-USE DEVELOPMENT
3. Biddulph. M, 2007, Introduction to Residential Layout, Elsevier
4. Engineers Consultant Sharmand, Comprehensive plan of Soltanie, 2006
5. Grant. J, September 30 – October 1, 2004, Encouraging mixed use in practice
6. Joseph S. Rabianski. j & Clements.S, November 2007, Mixed-Use Development: A Review of Professional Literature
7. Metropolitan Area Planning Council, 2009, Mixed Use Zoning( A Citizens' Guide)
8. Metropolitan Area Planning Council, 2009, Mixed Use Zoning (A Planners' Guide) [http://www.town.bedford.ma.usplanningmixed\\_use\\_tech\\_app.pdf](http://www.town.bedford.ma.usplanningmixed_use_tech_app.pdf)
9. Talen. E, 2008, DESIGN FOR DIVERSITY EXPLORING SOCIALLY MIXED NEIGHBORHOODS, Elsevier Ltd, Elsevier
10. Texas Community Design Committee, October, 2008, Mixed Use Matters
11. Urban Design + Architecture, Kansas, 2009, Overland Park Mixed Use Design Standards,
12. <http://www.lcd.state.or.us/tgm>
13. <http://www.minneapolisfed.org>
14. <http://www.tjpd.org>

2012/06/28