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FIG WORKING WEEK 2017

Helsinki Finland

29 May - 2 June 2017

*Presented at the FIG Working Week 2017,
May 29 - June 2, 2017 in Helsinki, Finland*



Surveying the world of tomorrow -
From digitalisation to augmented reality

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Spatial improvement strategies for deprived neighbourhoods



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The deprived neighbourhood

- The Dutch priority list of 40 problem neighbourhoods from 2007
- Improvements made - but few effects on socio-economic life can be seen
- The actions consist in improving the housing qualities, facilitate working opportunities, offering education and playing facilities for children and youngsters, and to enhance social integration and safety



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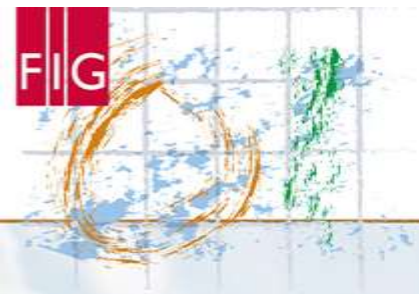


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What are the spatial parameters for generating street life between buildings in a neighbourhood?

- What kind of spatial features can contribute to generate social segregation or social integration?
- What are the spatial features for safe and lively neighbourhoods?
- How to communicate the results from research to planners and architects dealing with urban regeneration or planning practice in general?



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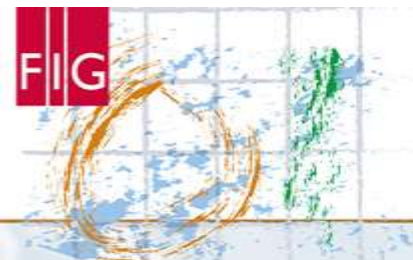


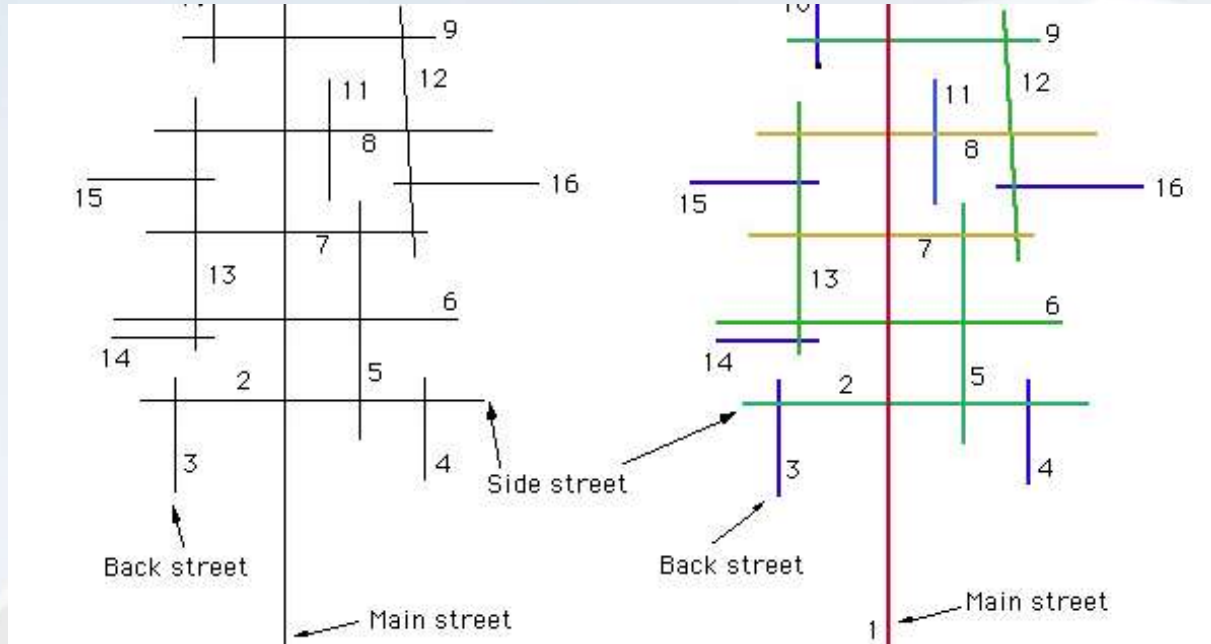
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Space Syntax – a method for measuring street vitality



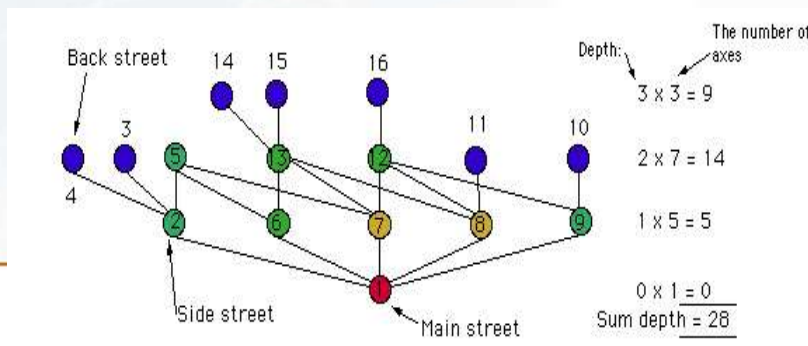
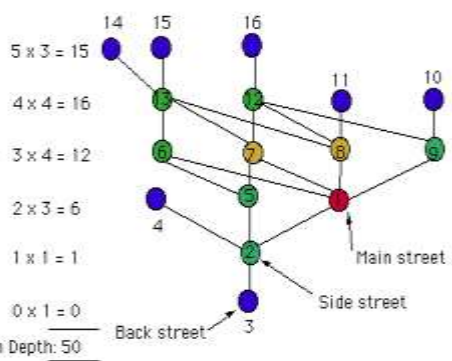
Calculating axial integration:
 Mean depth for each axis (MD):
 $MD = \frac{\text{sum depth}k}{k} - 1$
 $k = \text{number of axes in a system}$
 $\text{sum depth}k = \text{the topological depth from each axis to all other axes}$
 $Dk = \text{diamond value}$

Calculating the back street axis:
 $(MD) = \text{sum depth}k - 1 = 58/16 - 1 = 3,2333333$

Real asymmetry (RA) = $2MD - 1/k = 2 - 2 = 0,23333333 - 1/16 = -2 = 0,375068922$

Real relative asymmetry (RRA) = $RA/Dk = 0,375068922 / 0,375068922 = 1$

Integration value of the back street: $1/RRA = 1/1 = 1$



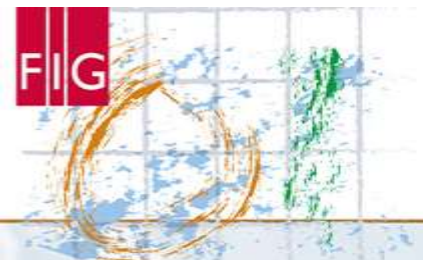


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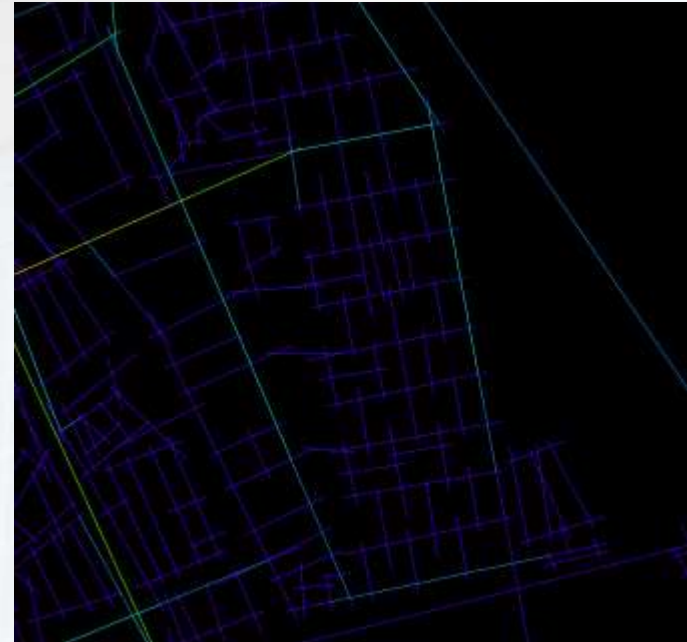
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Degree of integration within a large metrical radius - The location of the area in relation to main routes through and between urban areas



Strongly integrated main route going through the area



Weakly integrated main route going around the area



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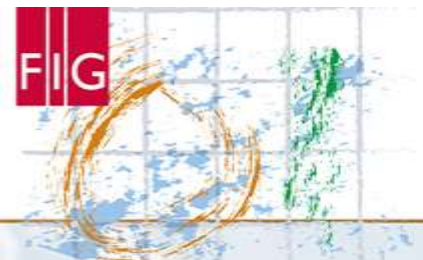


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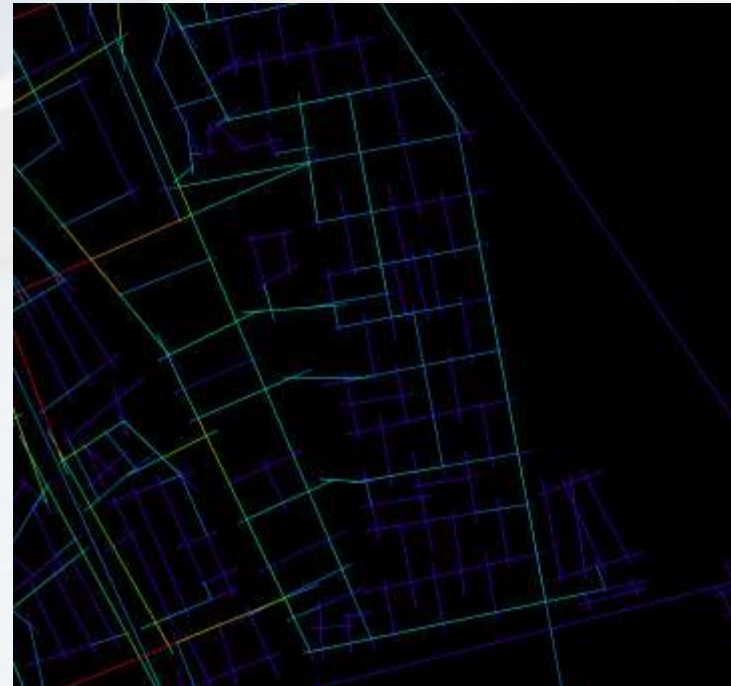
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Degree of integration within a small metrical radius – degree of street connectivity inside the area



Area with a well connected local street net



Area with a poorly connected local street net

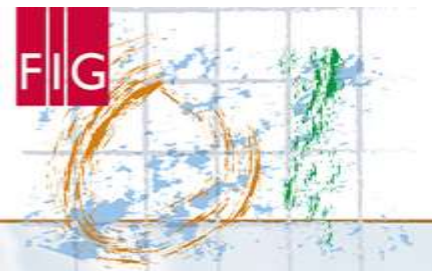


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Degree of inter-visibility between buildings towards streets



Inter-visible street



No inter-visible street

Both entrances and windows must be on ground floor level, and they must be like this on both sides of the street before a street is classified as inter-visible



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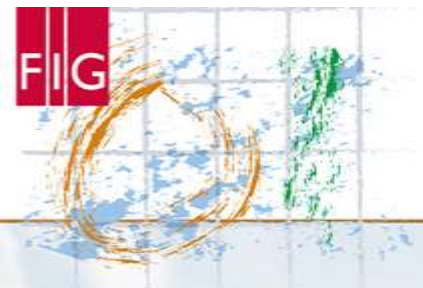


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Correlation between inter-visibility from buildings along main routes



Inter-visible main route



Not inter-visible main route



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4 spatial types of problem neighbourhoods

- 1. High values on the micro as well as macro scale spatial parameters
- 2. High values on the macro scale parameters, but low on the micro scale parameters
- 3. Low values on the macro scale parameters, but high on the micro scale parameters
- 4. Low values on the micro as well as macro scale spatial parameters



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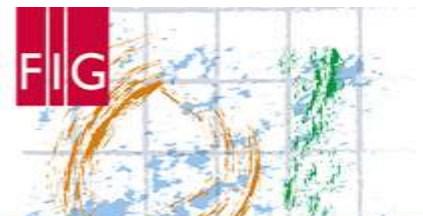


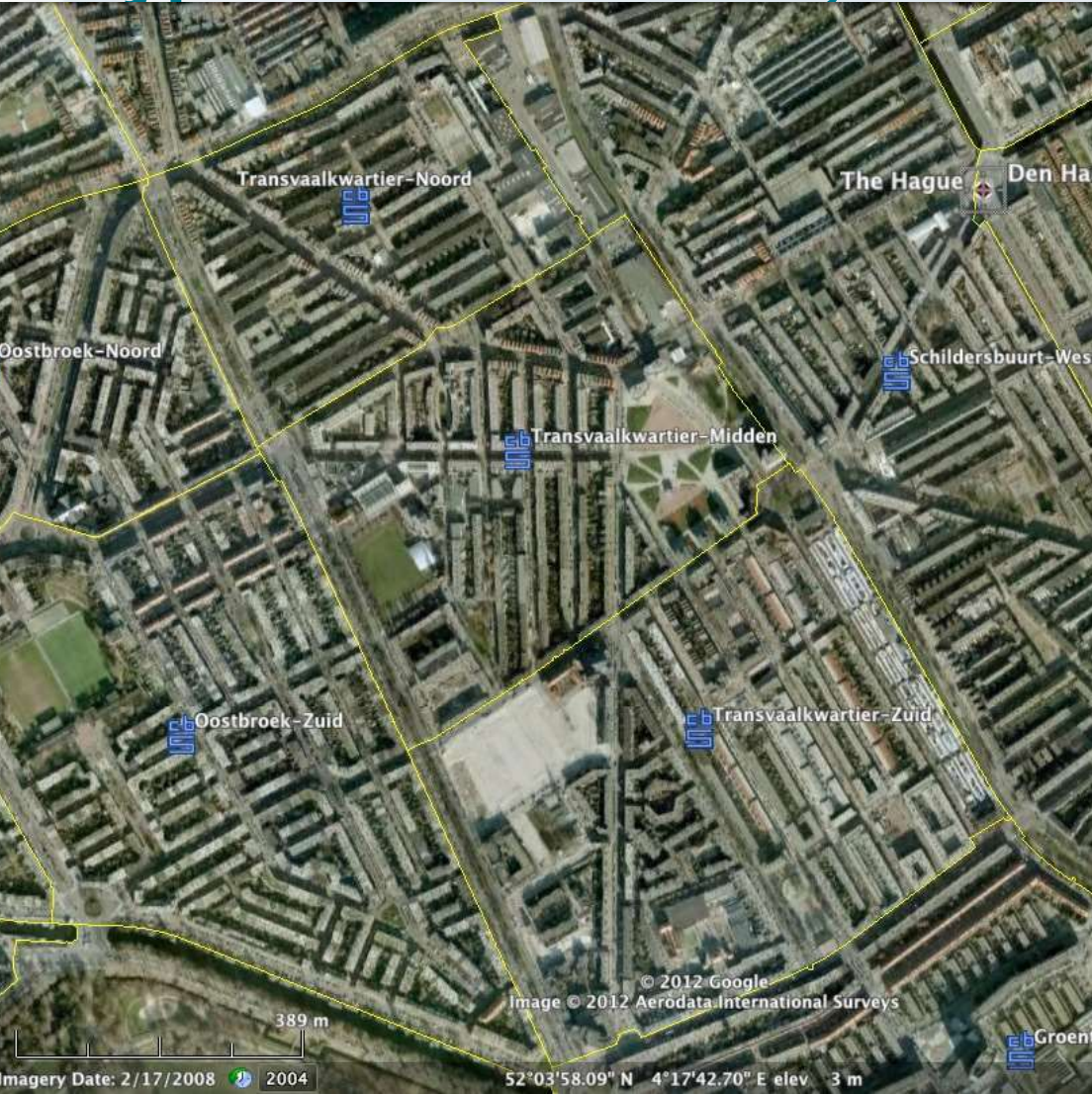
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Type one – Transval, The Hague



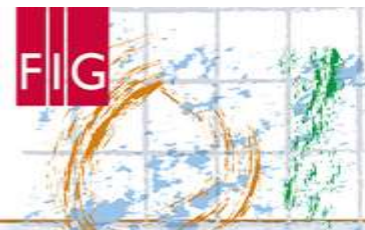


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Augmented reality
**Type two—
Nieuw West, Amsterdam**

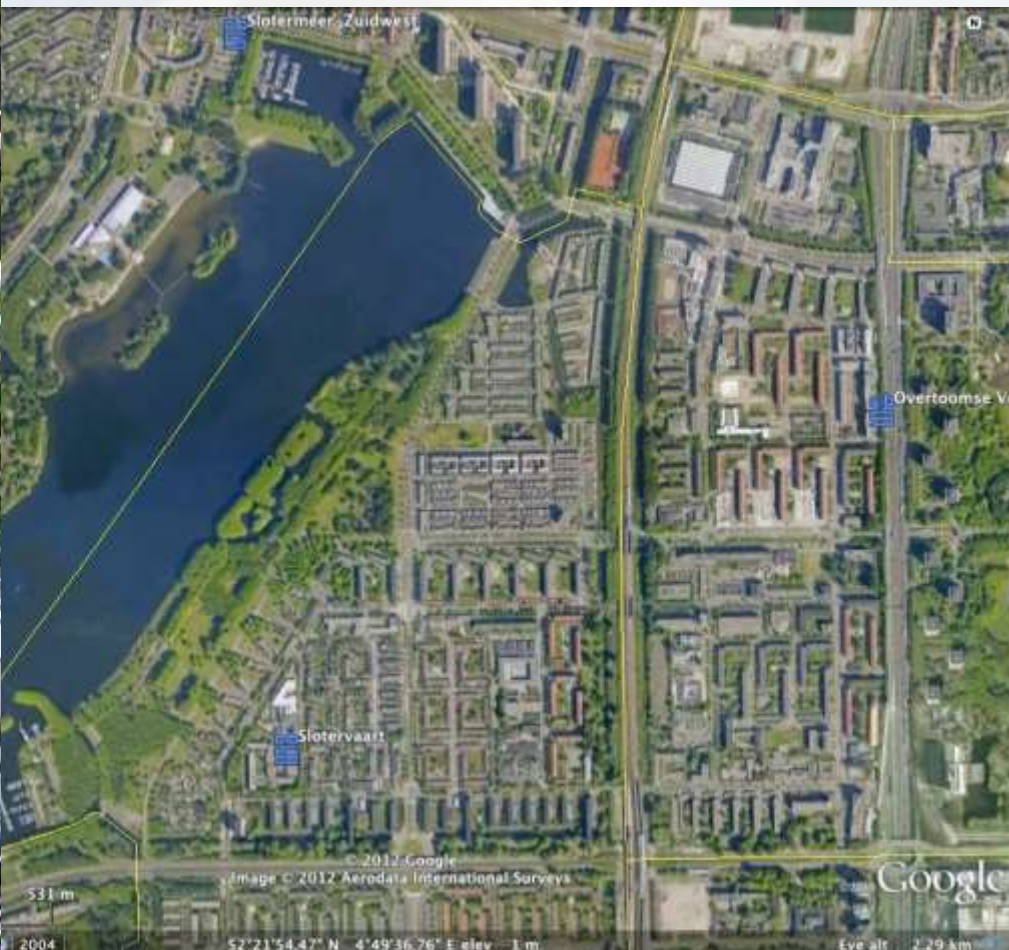
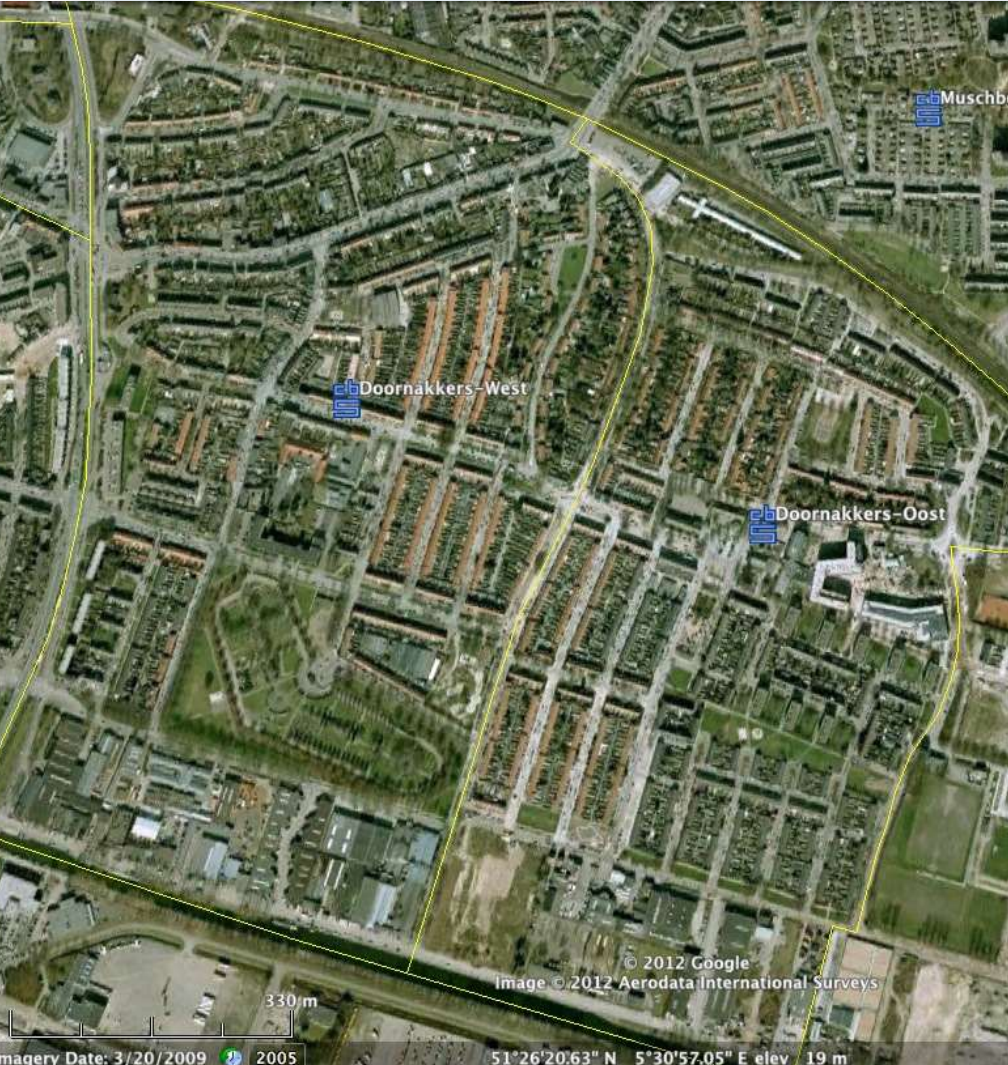


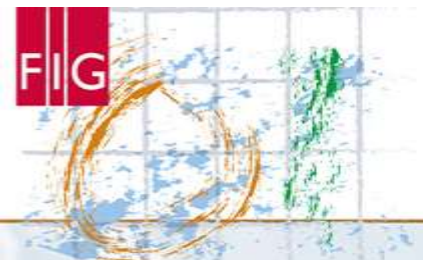


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Type three– Doornakker, Eindhoven





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Type four- Poelenburg, Zaanstad





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How to communicate these research results into planning and design strategies?

- What works well and what does not work?
- Think "space" before "form"



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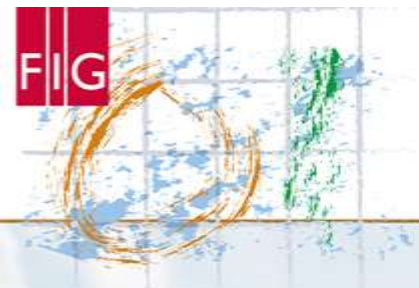


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9 spatial principles of safe urban design....

.... or reducing the spatial opportunities for crime and anti-social behaviour....



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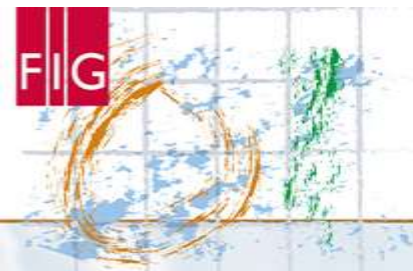


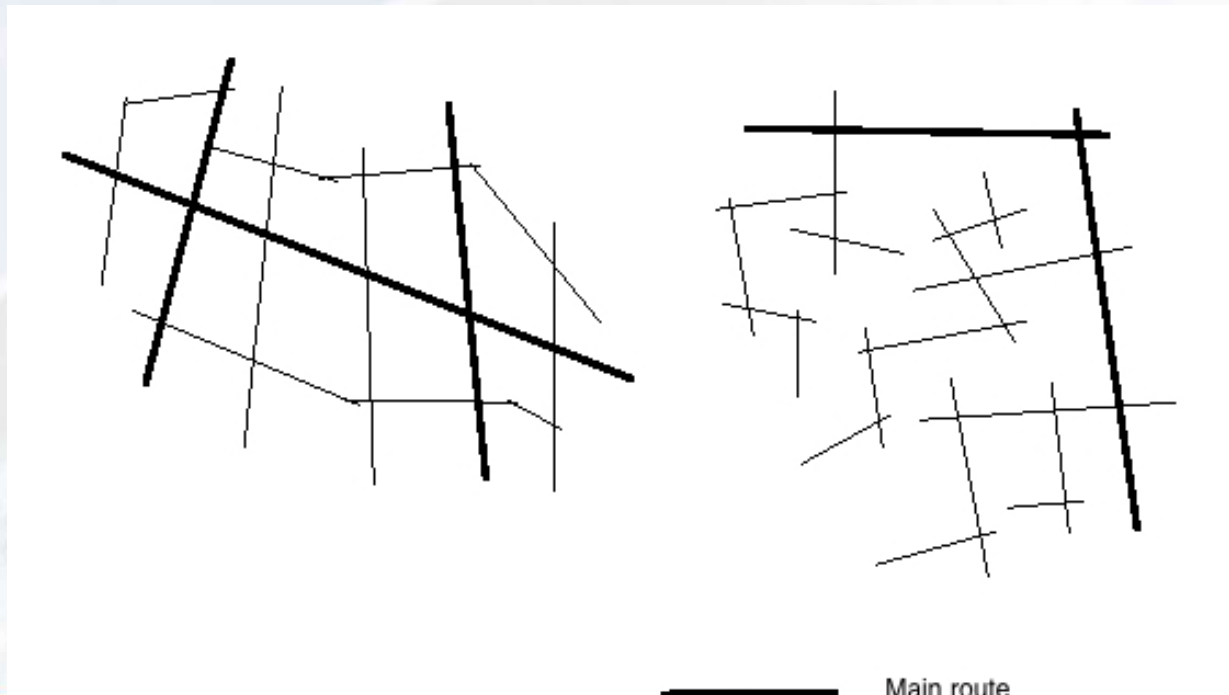
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1. Main route well integrated and well connected to local streets. The local streets have 1-2 direction changes from the main routes



— Main route
— Side street



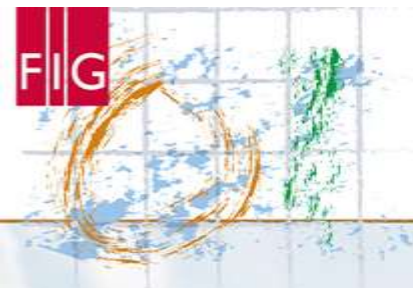


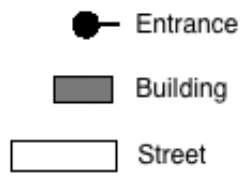
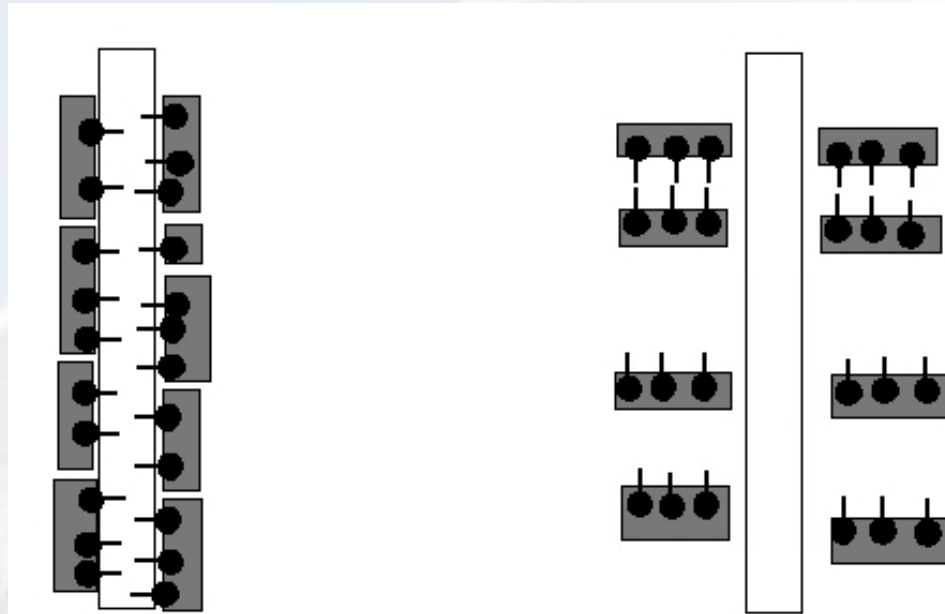
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2. Entrances connected directly to streets and inter-visible to each other



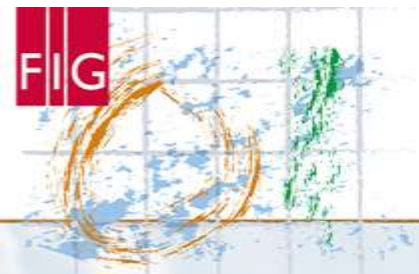


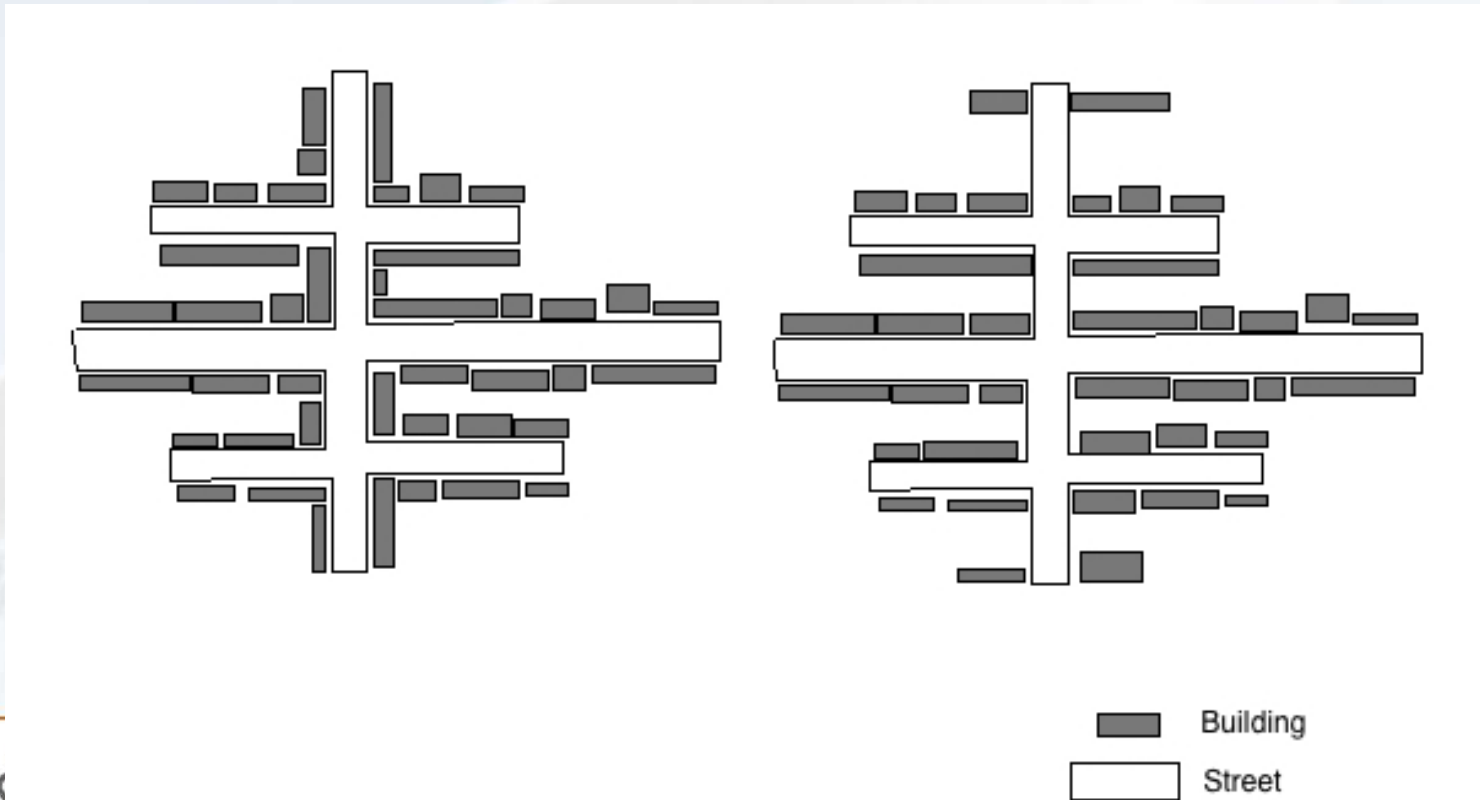
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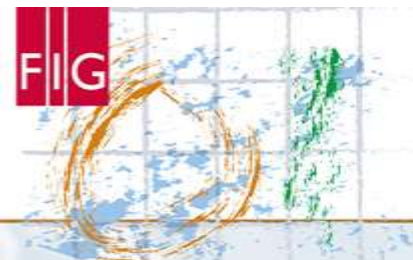
3. Avoid streets with blind walls, in particular in the streets that are directly connected to main routes





4. Enhance shop or business function on ground floor level instead of storage place. Windows and doors need to be directly connected to the streets





5. Have a **network** street net instead of a street structure, where the main route has a central position in the area

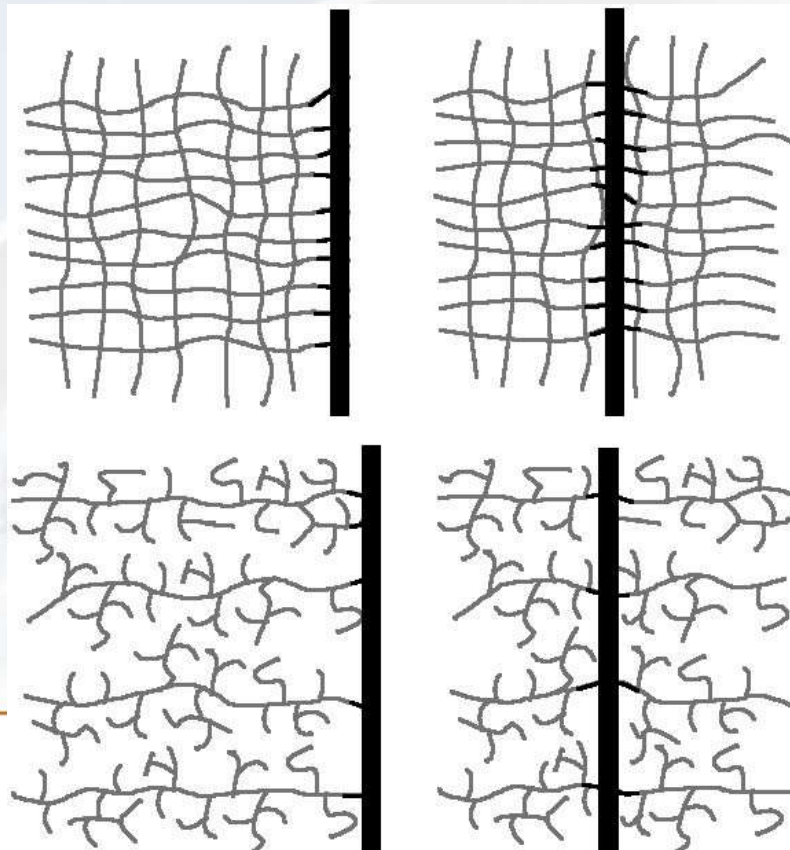




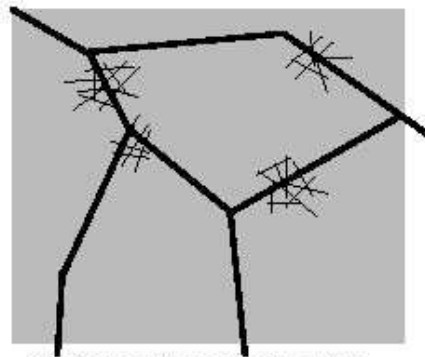
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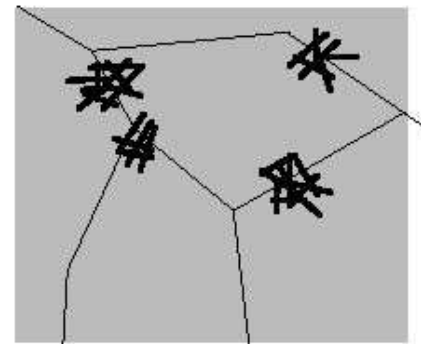
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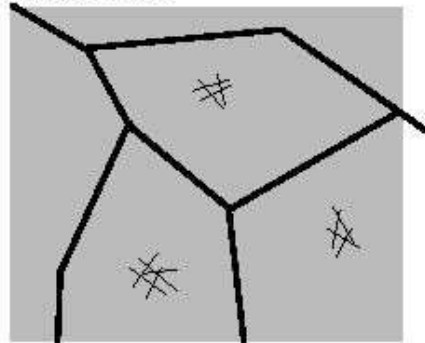
6. Main routes going **through** the local centres **instead of around them**



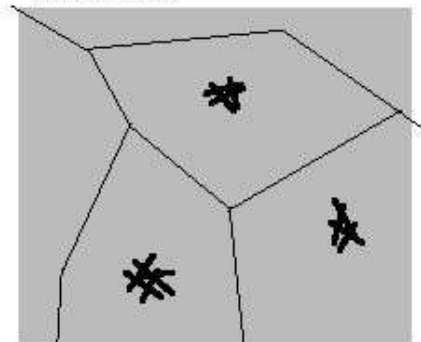
Traditional urban area with a high metrical radius



Traditional urban area with a low metrical radius



Post War urban area with a high metrical radius



Post War urban area with a low metrical radius



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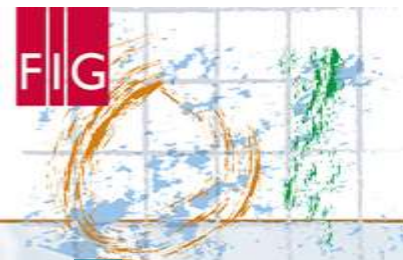


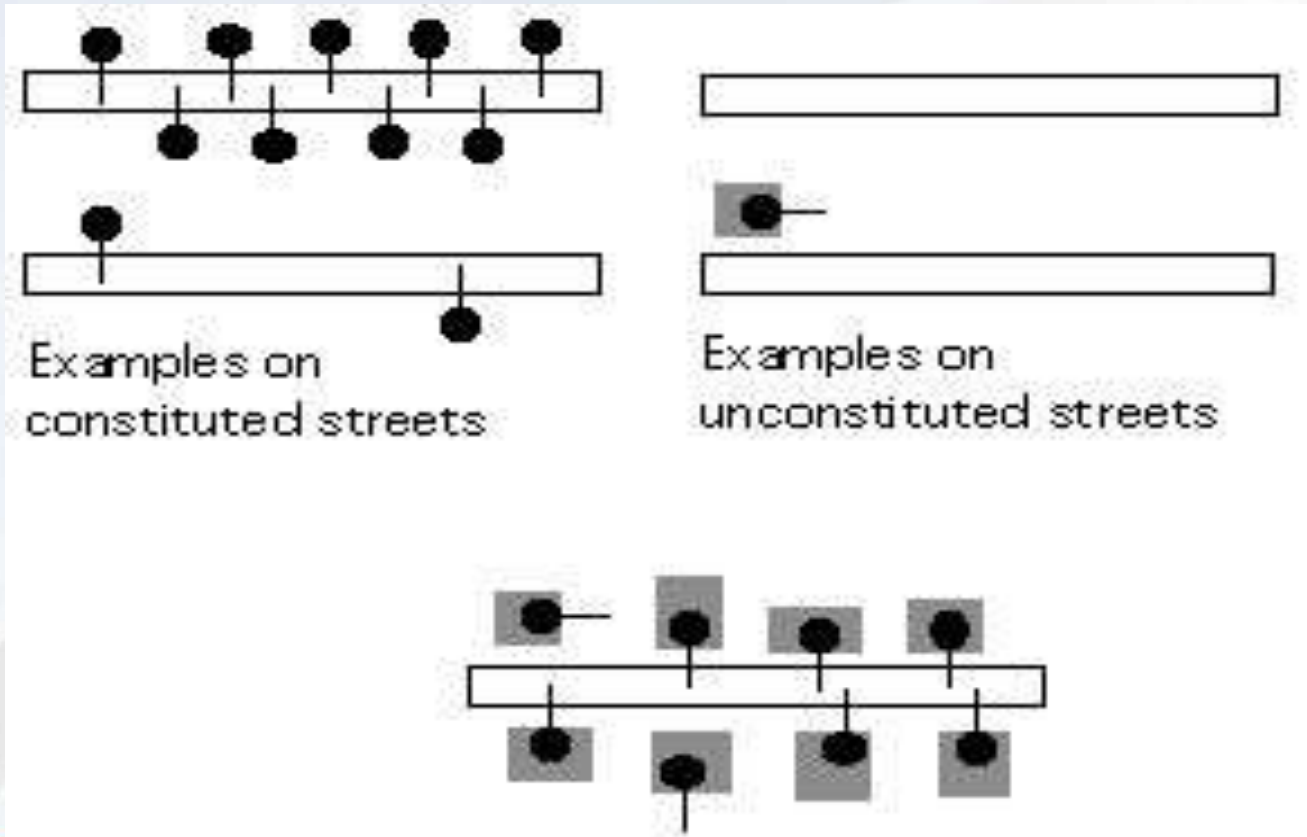
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7. If not possible to make inter-visible streets, then make them at last constituted



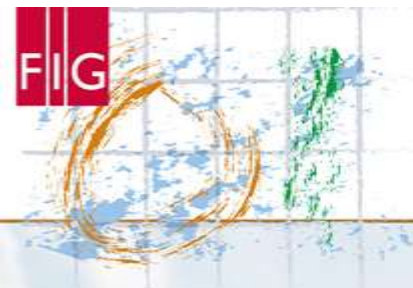


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8. And make sure that the topological depth between private and public space is short

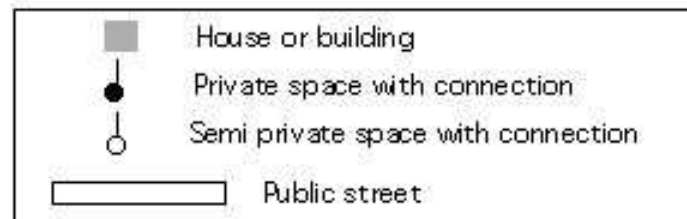
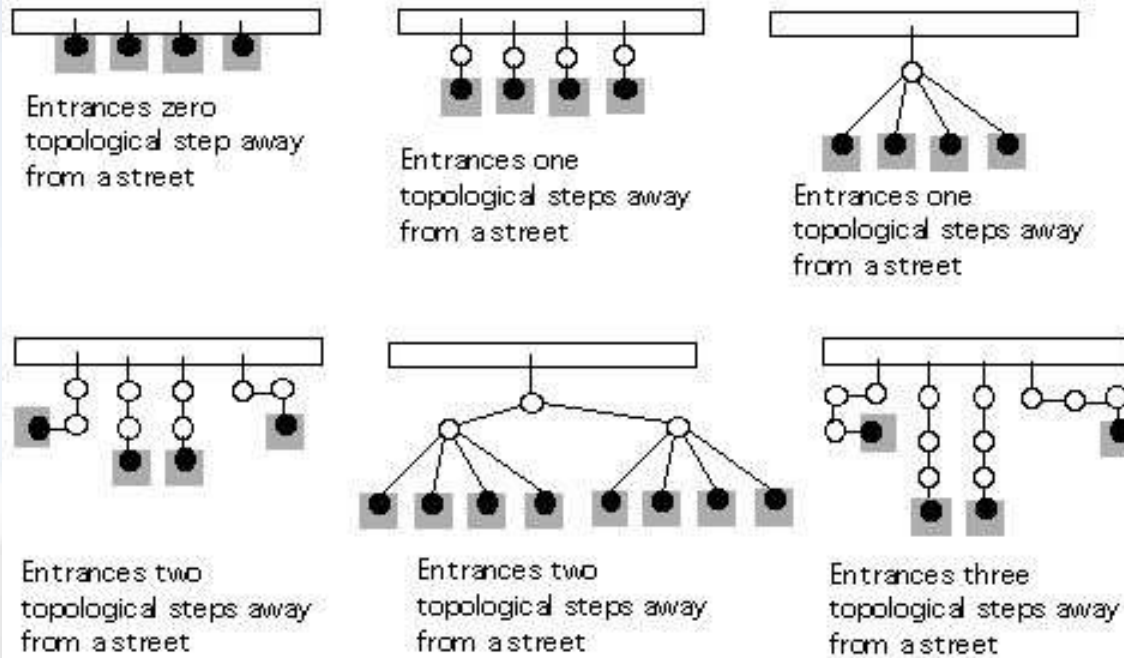




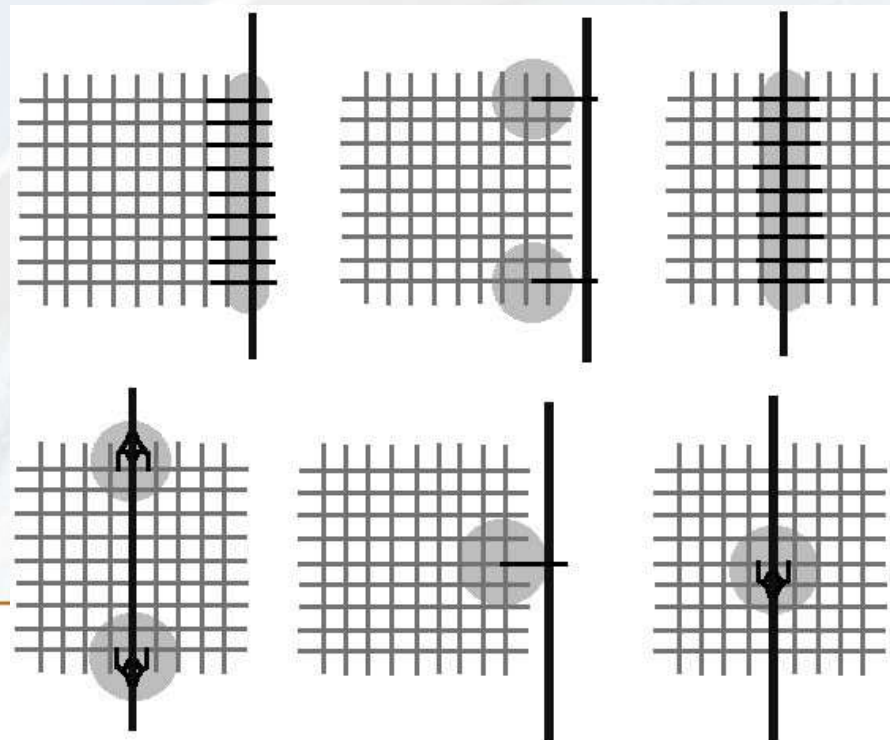
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9. A main route well connected to all streets in a neighbourhood generates a variation of micro businesses instead of a car-based shopping centre



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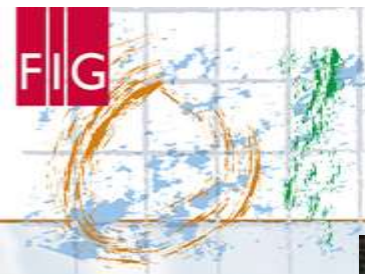


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Thank you...

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