

Introduction of **Maplat** solution

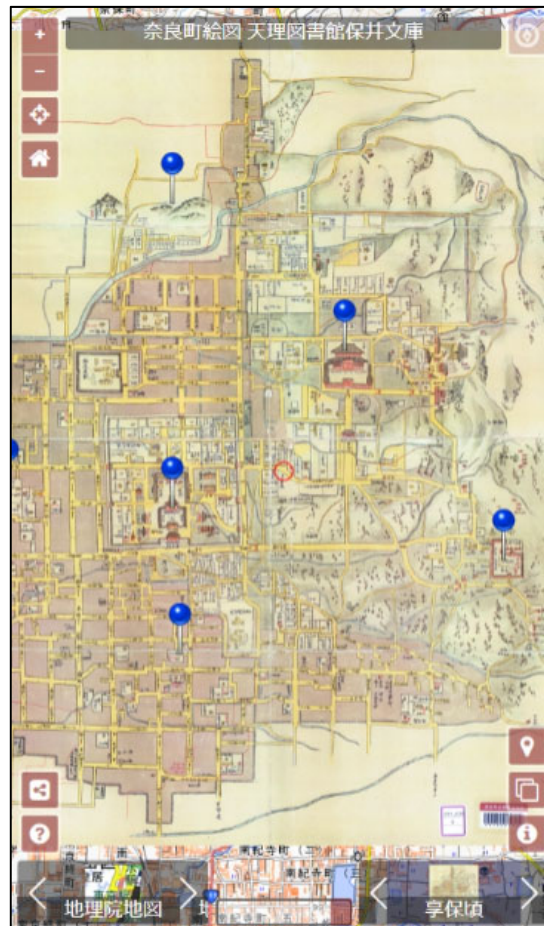
- Map for storied cities,
Map for smart cities -

What is Maplat?

Technology to handle “the best spatial representation for use cases” as “accurate geographic information”

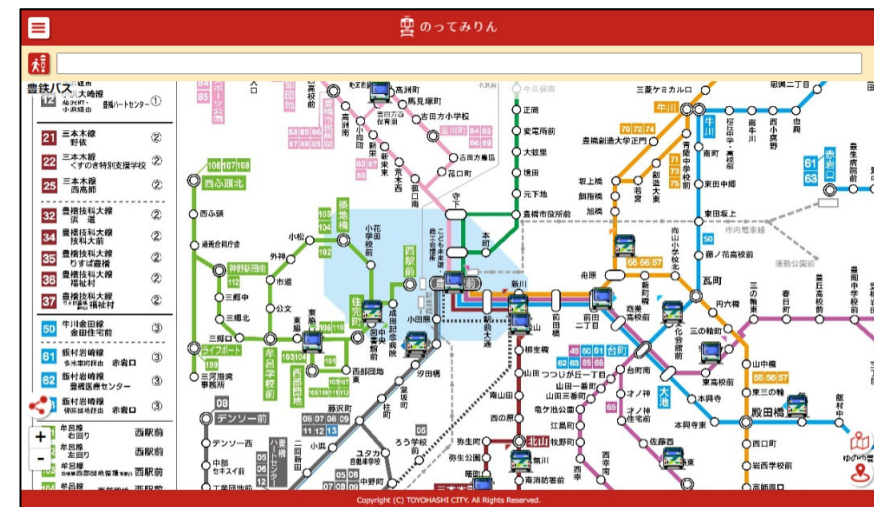


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Kasai tourism association



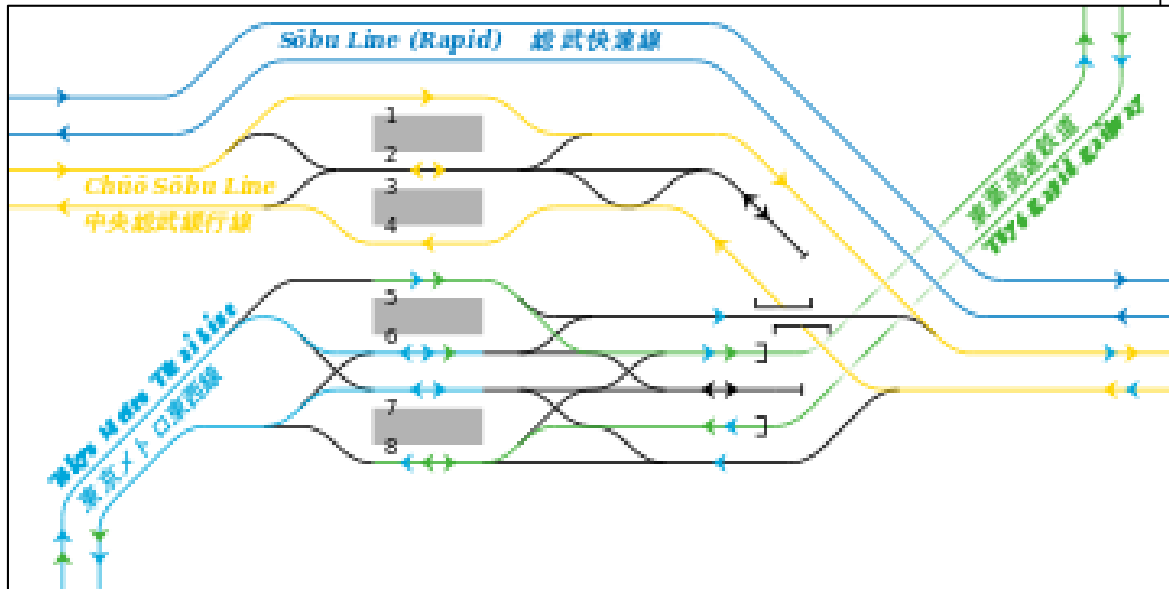
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- Map for storied cities,
Map for smart cities -



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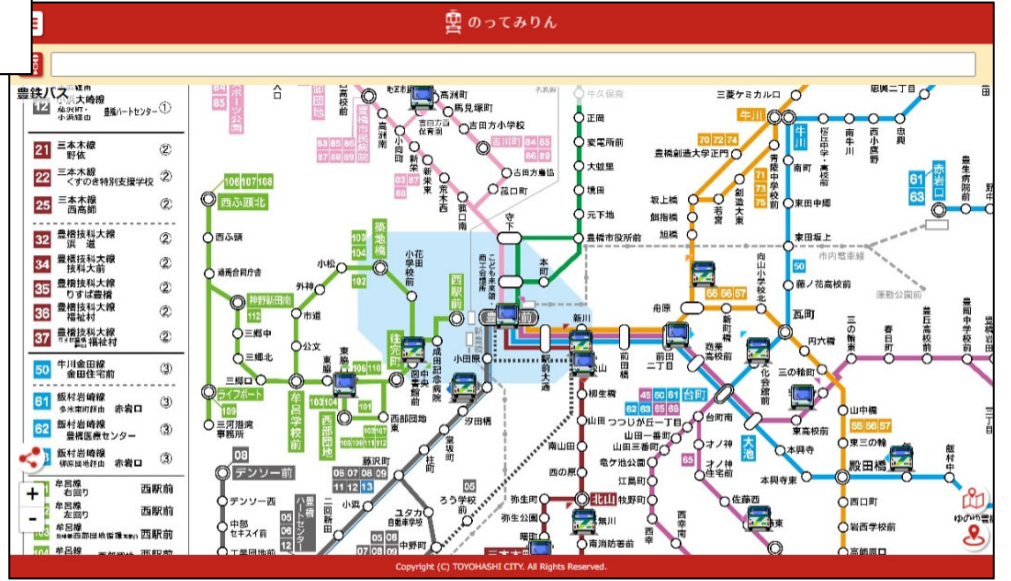
Market 1: MaaS / Smart city



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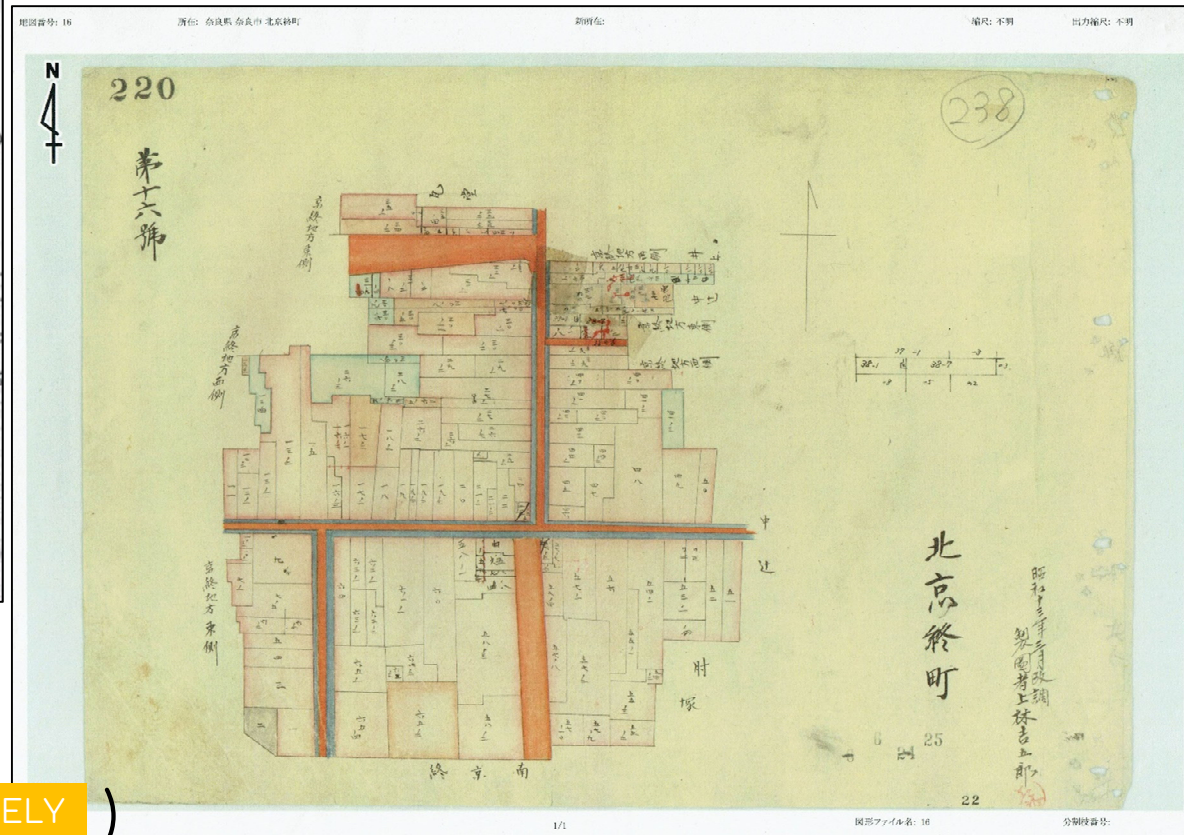


Code for History

Opportunities:

- Bus location system, Toyohashi-city (**ADOPTED**)
- MaaS app in smart city (**LIKELY**)
- Railway management system (**LIKELY**)

Market 2: Real estate registration



Opportunities:

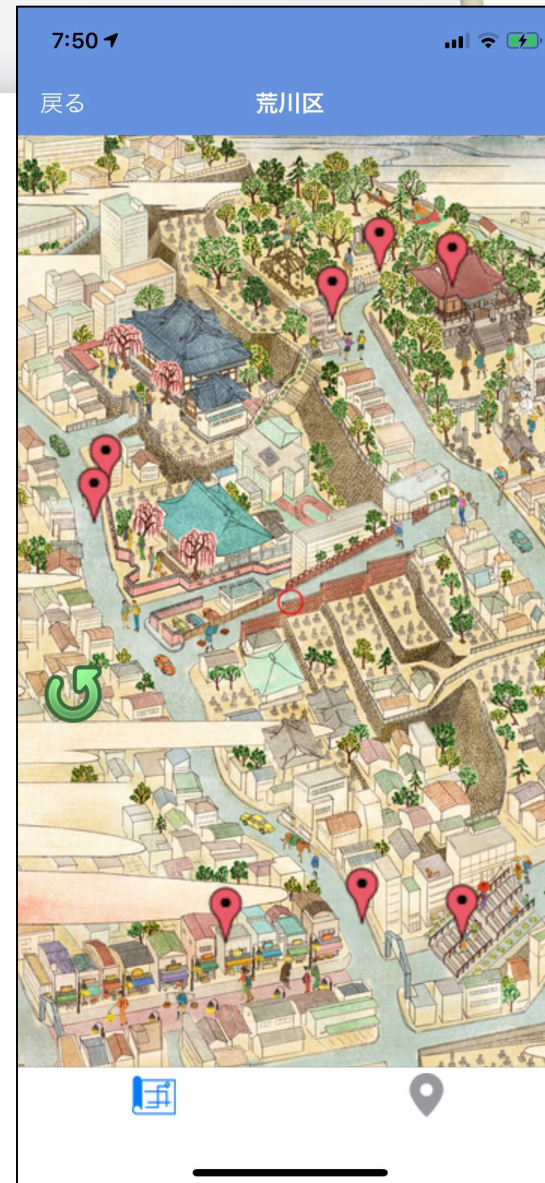
- Consultation request from land and house inspector (UNLIKELY)
- Consultation request from some prefectural officer (UNLIKELY)

NOTE: Japan's official real estate registration process is legally based on official inaccurate map, so how to handle inaccuracy is always problem.

Market 3: Tourism / Sightseeing



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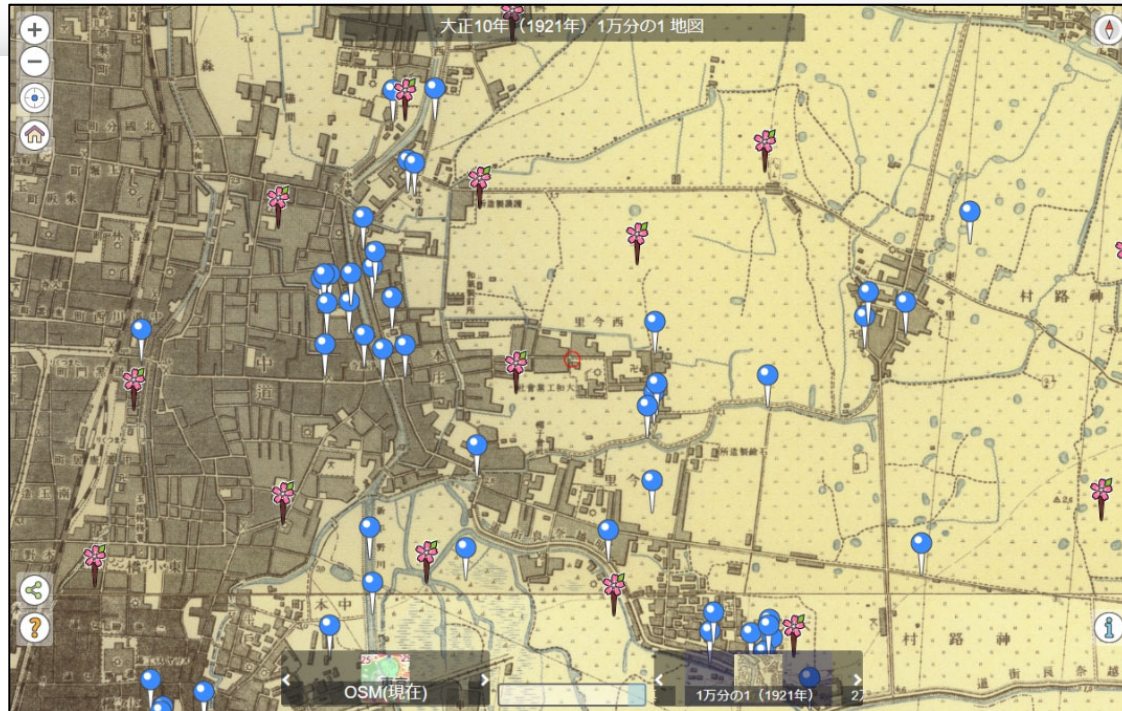


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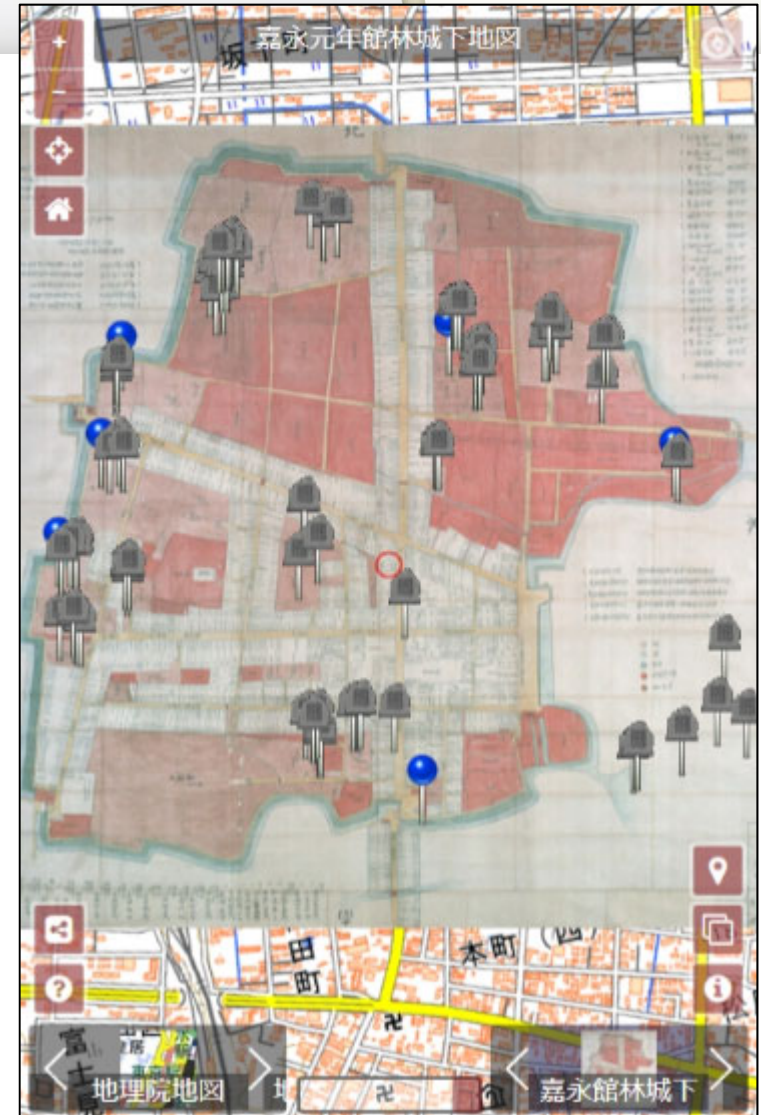
Opportunities:

- Used by Machidukuri platform Inc.'s Tourism app (adopted by 5 over municipalities **ADOPTED**)
- Used by Cogito Inc.'s Tourism app (adopted by 40 over municipalities **ADOPTED**)

Market 4: Education / Academic



© OSAKA city, Higashinari-ward



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Gumma historical succession association
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Opportunities:

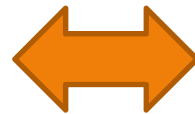
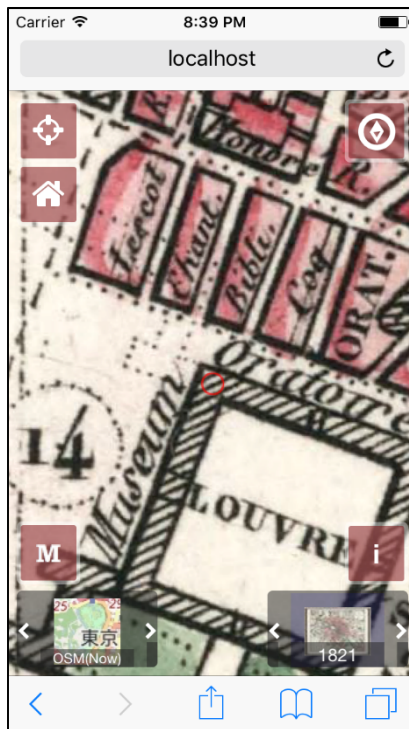
- City walking site for cultural assets, OSAKA Higashinari-ward (**ADOPTED**)
- Cultural assets introducing sites, Gumma historical succession association (**ADOPTED**)
- Some nature park use case (**LIKELY**)

Characteristics of Maplat

- It can switch between inaccurate map-like representation and accurate map coordinates or overlay them in real time
- It can convert not only the center position coordinate but also the direction and scale exactly
- It can convert the entire coordinate system with **homeomorphic** one to one conversion (**Japan patent, JP-6684776**)
- Line elements such as roads can also be converted by **the function of converting lines** with different shapes into lines
- Both libraries and data editors are **open source**

Homeomorphic conversion (Japan patent, JP-6684776)

- **Maplat** does not shift the display position when continuously switching maps
 - Bidirectional one-to-one conversion (homeomorphic conversion)

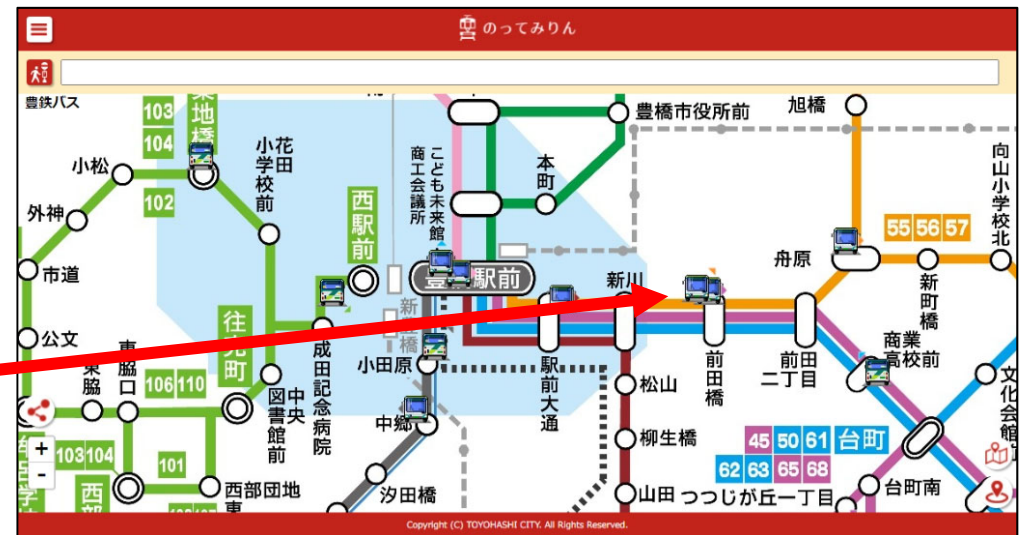


Not moving the position



Line-to-line conversion

- Based on homeomorphic conversion, **Maplat** can guarantee converting coordinates on the lines to on the other lines – This is useful for schematic map



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Awards

- In 2018, **Maplat** won the first and only triple crown (Grand Prize, Educational Effectiveness Prize, and Visitor Prize) in the Geo Activity Contest sponsored by the Geospatial Information Authority of Japan, Ministry of Land, Infrastructure, Transport and Tourism

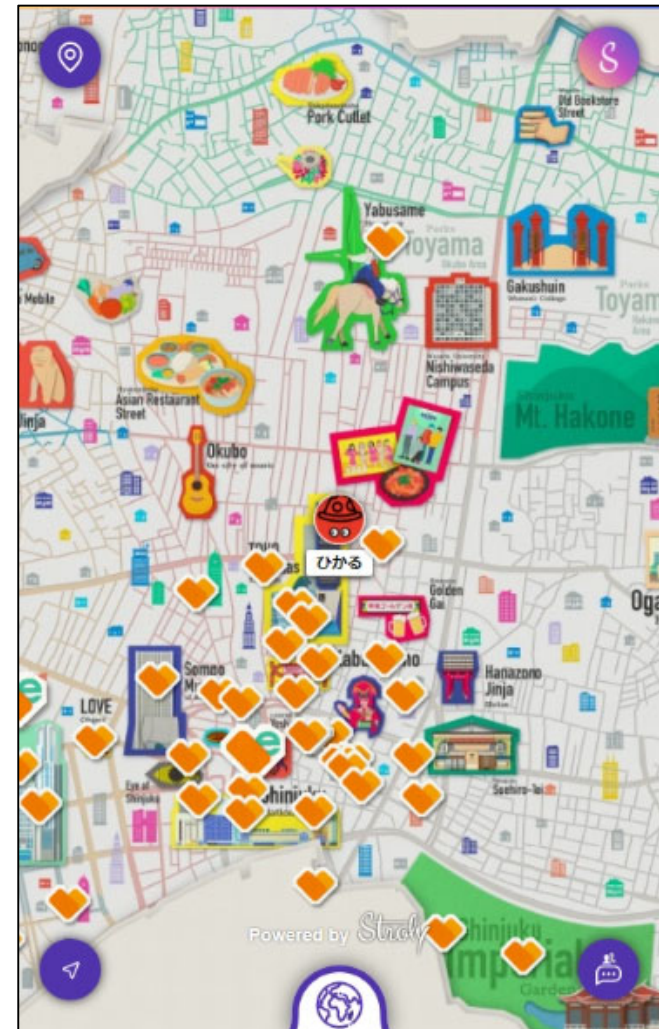


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- In 2019, First round selection in the Innovation Award / Disruptive Challenge category sponsored by the Ministry of Internal Affairs and Communications (Final selection declined)
- In 2021, Encouragement Award in the Geo Activity Contest sponsored by the Geospatial Information Authority of Japan, Ministry of Land, Infrastructure, Transport and Tourism

Competitor: Stroly

- Venture company in Kyoto which spun off from Advanced Telecommunications Research Institute International in 2016
- They have raised over 500 million JPY through 2018 and recently raised additional Series C funding in February 2022 (amount unknown)
- They are using old maps and illustrated maps to provide **Maplat**-like solutions to the tourism sector
- <https://stroly.com/>



© Stroly Inc.

Comparison with Stroly

Features	Stroly	Maplat
Ease of publishing	✓ Can be published just after editing	✗ Manual deployment of configuration files is required
Communication function	✓ Users can communicate on the map each other	✗ Future planning
Entertainment feature (Stamp-rally)	✓	✗
Homeomorphic conversion	✗ Pseudo conversion	✓ Japan Patent technology
Scale/direction conversion	✗ Bugs that cannot convert scale	✓ Scale/direction are precisely converted
Convert Lines to Lines	✗	✓
Map overlay	✗ Toggle only, slow	✓ Always overlay, briskly
Off-line operation	✗	✓ PWA support
Network environment	✗ Work only on internet	✓ Can work on intranet/local
HTML embedding	✗ IFRAME embedding only	✓ DIV embedding, can be controlled with API
Share function	✗ Sharing map page only	✓ Sharing viewpoint is also possible
Mobile support	✗ Only Stroly Inc. can build mobile apps	✓ iOS/Android libraries are provided
Existing GIS support	✗ Cannot support GIS data	✓ Can both edit and display GIS data
Open source	✗	✓

Strengths compared to Stroly 1: Same patent inventor

Stroly's most important patent: JP-5810411

(19) 日本国特許庁 (JP)	(12) 特許公報 (B2)	(11) 特許番号
(45) 発行日	平成27年11月11日 (2015.11.11)	特許第5810411号 (P5810411)
(24) 登録日	平成27年10月2日 (2015.10.2)	
(51) Int. Cl.	F I	
	G09B 29/00 (2006.01)	G09B 29/00 A
	G08G 1/005 (2006.01)	G08G 1/005
請求項の数 10 (全 48 頁)		
(21) 出願番号	特願2011-252281 (P2011-252281)	(73) 特許権者
(22) 出願日	平成23年11月18日 (2011.11.18)	株式会社国際電気通信基礎技術研究所
(65) 公開番号	特開2013-109049 (P2013-109049A)	京都市相楽郡精華町光台二丁目2番地2
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		審査官 鈴木 崇雅
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Inventor: Kohei Otsuka
(Right for application is owned by Stroly)

Maplat's patent: JP-6684776

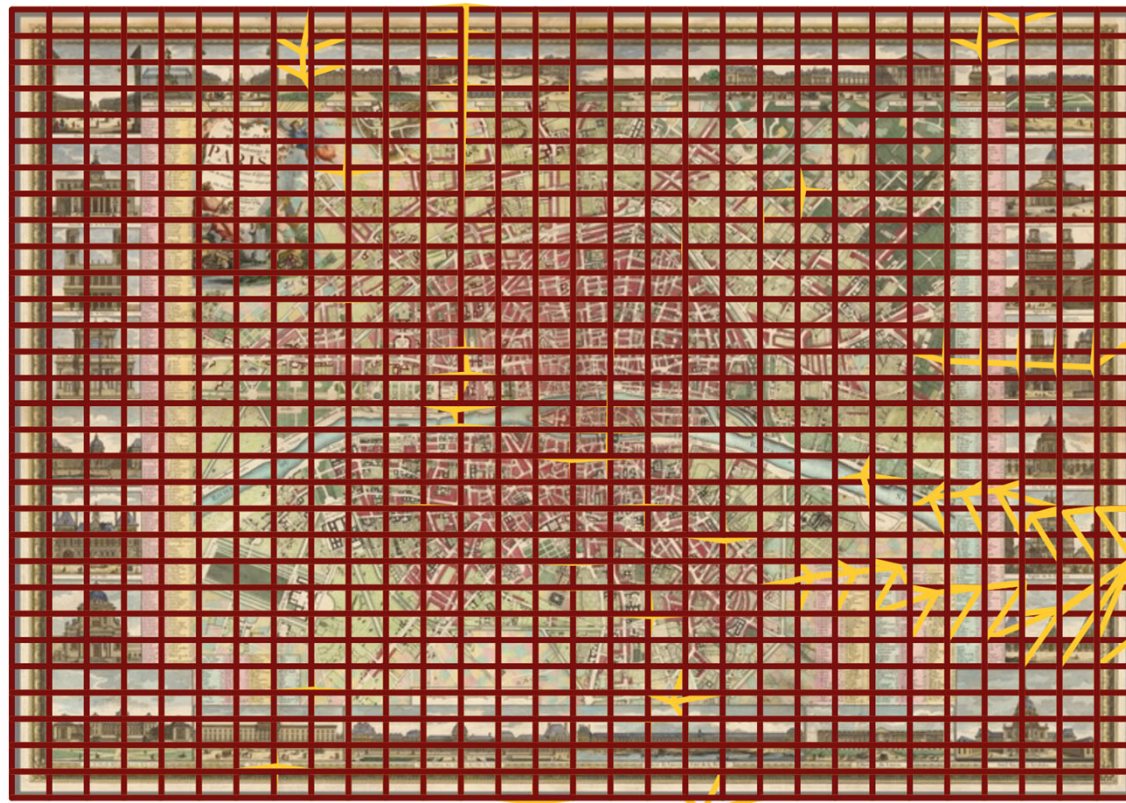
(19) 日本国特許庁 (JP)	(12) 特許公報 (B2)	(11) 特許番号
(45) 発行日	令和2年4月22日 (2020.4.22)	特許第6684776号 (P6684776)
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(51) Int. Cl.	F I	
	G06T 11/60 (2006.01)	G06T 11/60 300
	G09B 29/00 (2006.01)	G09B 29/00 A
	G09B 29/10 (2006.01)	G09B 29/10 A
	G01C 21/26 (2006.01)	G01C 21/26 B
	G08G 1/005 (2006.01)	G08G 1/005
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(22) 出願日	平成29年11月13日 (2017.11.13)	大塚 恒平
(65) 公開番号	特開2019-91147 (P2019-91147A)	
(43) 公開日	令和1年6月13日 (2019.6.13)	(74) 代理人
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Inventor: Kohei Otsuka
(Right for application is owned by inventor)

- Both technology were spawn from same inventor, and **the newest, most advanced implementation is Maplat**
- All innovations in the world around this have been defined by one person

Strengths compared to Stroly 2-1: Homeomorphic conversion (patented)

Comparison of roundtrip coordinate conversion



Paris' old map example:

Maplat: red

Stroly: yellow

The accuracy is better as the shape returns to the grid shape

Conversion error

Maplat: 0.000px

(Less than rounding error)

Stroly: 11.094px

- **Homeomorphic conversion** (and **Line-to-line conversion**) is premise of MaaS / real estate use cases. Hence, **Stroly** can handle hobby-like use cases (Education, tourism), but **cannot handle mission-critical use cases. Maplat can handle them** (This can be mathematically proved)

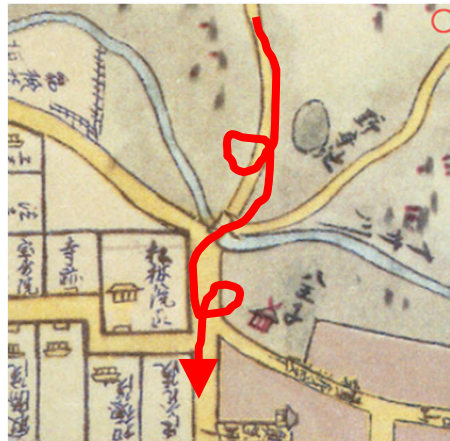
Strengths compared to Stroly 2-2: Homeomorphic conversion (Easier to understand)

What is the difference with / without homeomorphic conversion?

For moving in reality:

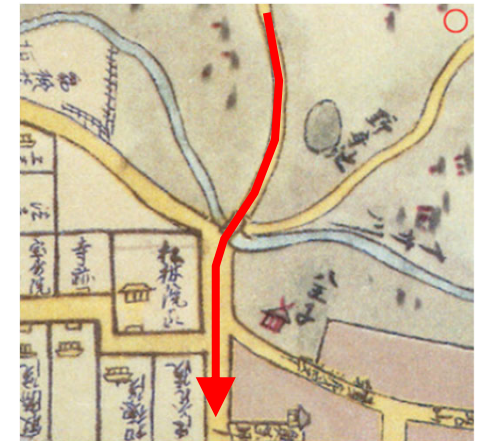


Without homeomorphic conversion:



- Continuous motion in reality may be converted to non-continuous, mess motion
- Although it does not end always in abnormal conversions, it cannot be guaranteed normal conversions, and since the abnormal conditions are undefinable, the only way to find the error is to test in all coordinate
- Even if an abnormal conversion is detected, there is no way to define a guideline for how to correct the data

With homeomorphic conversion:



- Continuous motion in reality can be guaranteed to be converted to continuous motion in historical map
- Even in the case of abnormal conversion, the incorrect reason can be detected, and it is clear what needs to be corrected
- Furthermore, with **Maplat**, not only the conversion is continuous, but also line-to-line conversion is possible

Strategy for business 1: Cooperation with Stroly

- Stroly is an inferior technology, however, they have already raised a lot of money, have a certain degree of name recognition, and are a little ahead of customers and contents
 - **Maplat** keep high level compatibility to Stroly
- ⇒ Once Stroly adopt **Maplat** as their new engine and pay license fee to **Maplat**, it is win-win relationship of both entities and existing Stroly customers can enjoy keen-edge technologies
- We have been friendly proposed this idea to Stroly over 3 years
 - Obstacles for this idea: Stroly board members' hostility to **Maplat**

Strategy for business 2: Launch a new business entity

- Even if Stroly doesn't collaborate with **Maplat**, it is easy to beat them by raising money and launching a competing business
 - **Maplat**'s strength is protected by IP and inventor's talents
 - Stroly have several strengths than **Maplat** (like Easy-to-use web editors, Map based communication tools, Stamp-rally game capabilities, etc.), but such strengths are all labor intensive functions and not protected by IP. Hence, once **Maplat** raise money, it is easily catching up soon
 - Stroly have a little ahead of customers and contents, but they are quite few (Only 200 customers and 9000 contents even after 5 years of business – according to their press releases). So there are almost no first-mover advantage, innovated technology can beat them
 - Customers like Municipalities have several problems in several markets (Tourism, Education, MaaS, Real estates) – **Maplat** can cover all of such use cases, Stroly can't

Map for storied cities, Map for smart cities

- An attractive city is one where the stories that have been told (History) and the stories that are about to be told (Dream) are woven together in an appropriate way to create a coherent story
- **Maplat** can handle both past story (education / tourism) and future story (smart city) together
- **Maplat** will be the fundamental information platform for smart cities, where the past and future can be storied about in harmony

End

Github pages: <https://code4history.dev/>
Github repository of **Maplat**:
<https://github.com/code4history/Maplat/>
E-mail: kochizufan@code4history.dev