

“Nature is always true and never trivial”

Hans Strand, Photographer



Tourism

Important Economical Factor

- **Switzerland** 35.6 million overnight stays/year
- **New Zealand** hosts ca. 2 millions tourists/year

Sources: World Trade Organization, www.wto.org, June 2012

Statistical New Zealand Tourism Satellite Account, www.stats.govt.nz, June 2012

Ski Resorts by Continents

Worldwide 4649 Resorts (At Least one Ski Lift, Out- or Indoor)

Europe	2962
Asia	800
North America	770 (428*)
Australia & Ozeania	55
South America	49
Africa	12



Ski Resorts by Countries

Comparing some selected “Ski Nations”

USA	496 Ski Resorts
Austria	386
Canada	273
Italy	270
Switzerland	254 (187*)
France	251
New Zealand	25
Australia	15



Ski Resorts – Panoramic Maps

“Trails maps for ski areas are iconic images of the nature of the sport of skiing...” (Tait, 2008).



Self-administered Survey

Goals

- The key objective of this survey is to investigate, how panoramic maps are perceived and used by various user groups.
- The results may assist panorama artists to adapt or improve representations of panoramic maps and their production techniques in the future.

Recruitment

- 356 persons asked per email, attached questionnaire
- Members of the Mountain Cartography Commission
- Members of the Swiss Society of Cartography
- Cartographers, Map Enthusiasts, Graphics Designer,...
- Cartography Students from Germany
- Persons unrelated to maps

Self-Administered Survey

projectPANORAMA
perception and visualization of panoramic views

AIM AND STEPS OF THIS SURVEY

Thank you for your participation in our survey!

The aim of this survey is to investigate, how panoramas are consulted by various user groups. Individual user profiles will assist panorama artists in their future work. Furthermore, a comparison of manual hand-drawn panoramas with computer-generated panoramas is intended.

Please proceed as follows:

- save this PDF file on your hard disk
- click corresponding fields or fill the textboxes with content
- send back the edited survey to the following e-mail address:

project.panorama2012@googlemail.com

Please answer the questions truthfully and based on your personal experiences in dealing with panoramas. The survey is completely anonymous.

The survey ends on May 1, 2012.

Thank you for your support!

USER PROFILE

gender

female male

you are ...

right-handed left-handed

age

until 18 years 19 – 40 years 41 – 60 years over 61 years

nationality

language

German French Italian English other

profession

you ...

do winter sports and have experience using maps. just do winter sports.

have just experience using maps. neither nor

How do you use panoramas? (multiple choice)

I collect panoramas.

I use info boards in winter sports resorts.

I use panoramas in the world wide web (e.g. Google Earth).

I use panoramas on smartphones.

I do not use panoramas.




Figure 1. Obersaxen (W. Kettler)




Figure 2. Obersaxen (W. Kettler)

Regardless of the content shown in the panoramas, can you detect any differences between figure 1 and 2?

Yes No

If yes, what are the differences? Please list them.




Figure 3. Obersaxen (W. Kettler)




Figure 4. Obersaxen (W. Kettler)

Does the missing of the color have any influence on your spatial perception?

Yes No

If so, how does it affect?

Self-Administered Survey




Figure 5. Oberaxen (W. Kettler)



Figure 6. Oberaxen (map.geo.admin.ch)

Which mountain is higher than the point marked in red? Piz Mundaun Piz Sezner

Which figure contains a railway? Figure 5 Figure 6 neither nor

Which of the two figures would you use to orientate yourself in winter sports resorts like Oberaxen?
 Figure 5 Figure 6



Figure 7. Aletscharena (W. Kettler)




Figure 8. Aletscharena (<http://maps.google.ch>)

Which of the two panoramas would you use to orientate yourself in winter sports resorts like Aletscharena?
 Figure 7 Figure 8

Is it possible that the production of traditional handmade panoramas will be replaced by computer rendering methods in the near future?
 Yes No

Do you know any software products / web applications to generate panoramas?
 Yes No

If yes, please list them.

What would you like to do to optimize panoramas ...

with regard to content?

with regard to visualization?

Further comments on this survey are welcome

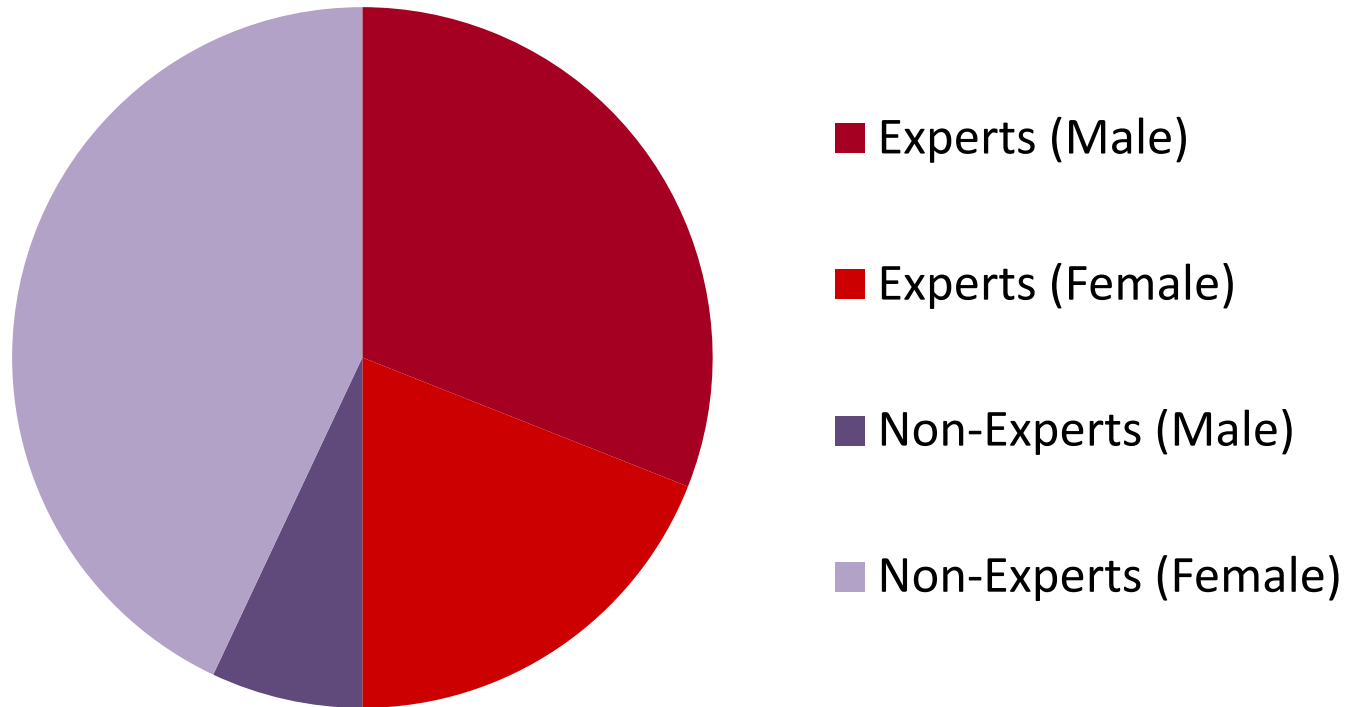
User Profiles

Attendees: 100 persons, 50 males, 50 females

	Participants (100)	Experts (38)		Non-Experts (62)	
Gender					
Male	50	31	82%	19	31%
Female	50	7	18%	43	69%
Handedness					
Right-handed	84	33	87%	51	82%
Left-handed	16	5	13%	11	18%
Age Group					
under 20	1	0	0%	1	1%
20-40	56	21	55%	35	57%
40-60	30	12	32%	18	29%
over 61	13	5	13%	8	13%
First Language					
German	96	34	89%	62	100%
English	3	3	8%	0	0%
Others	1	1	3%	0	0%
Winter Sports					
Practising	50	23	61%	27	44%

Survey Participants

Experts, Non-Experts



Braunwald
autofree

Pisten

- 1 Grotzenbüel
- 2 Hütenberg-Dorf
- 3 Schwetliberg
- 4 Seblen-Grotzenbüel
- 5 Panoramapiste
- 6 Kneugratweg
- 7 Bächital mittel
- 8 Bächital schwer
- 9 Gumen-Leglerberg
- 10 Givand

Winterangebote

- a Geniesserloipe
- b Grotzenbüel-Hütenberg
- c Schwetliberg
- d Kinderland
- e Freeride-Anlage Grotzenbüel
- f Panoramaweg Orflockhaus-Kneugrat
- g Grotzenbüel-Schwetliberg-Dorf
- k Natureisfeld Bellevue

Hotels & Restaurants

- 1 adrenalin backpackers hostel
- 2 Alexander's Topblick
- 3 Bauernhaus Sursberg
- 4 Cafeteria RehaClinic
- 5 Familienhotel Hütenberg
- 6 Hotel Cristal
- 7 Märchenhotel Bellevue
- 8 Chalets Hotel Aaborn
- 9 Restaurant Nordküel
- 0 Restaurant Uhu

Gipfelstürmer der Schweizer Beliebtheitsskala.
KUGA 4x4

Ford
Feel the difference
ford.ch

Perception Map Reading



Visual Perception

Red-Green Confusion



Regardless of the content, can you detect any differences between this two images?

If yes, what are the differences?

Red-Green Confusion

Male

22%

Female

6%

Survey, 2012

8%

0.4%

Worldwide

Spatial Perception

Colours vs Grayscale



Does the missing of the colour have any influence on your spatial perception?

Spatial Perception

Not influenced

Influenced by Grayscale

51%

49%

63%

37%

Experts

44%

56%

Non-Experts

Map Reading

Which mountain is higher than the point marked in red?



Map Reading

Piz Sezner (correct)

79%

Piz Mundain

21%

89%

11%

Experts

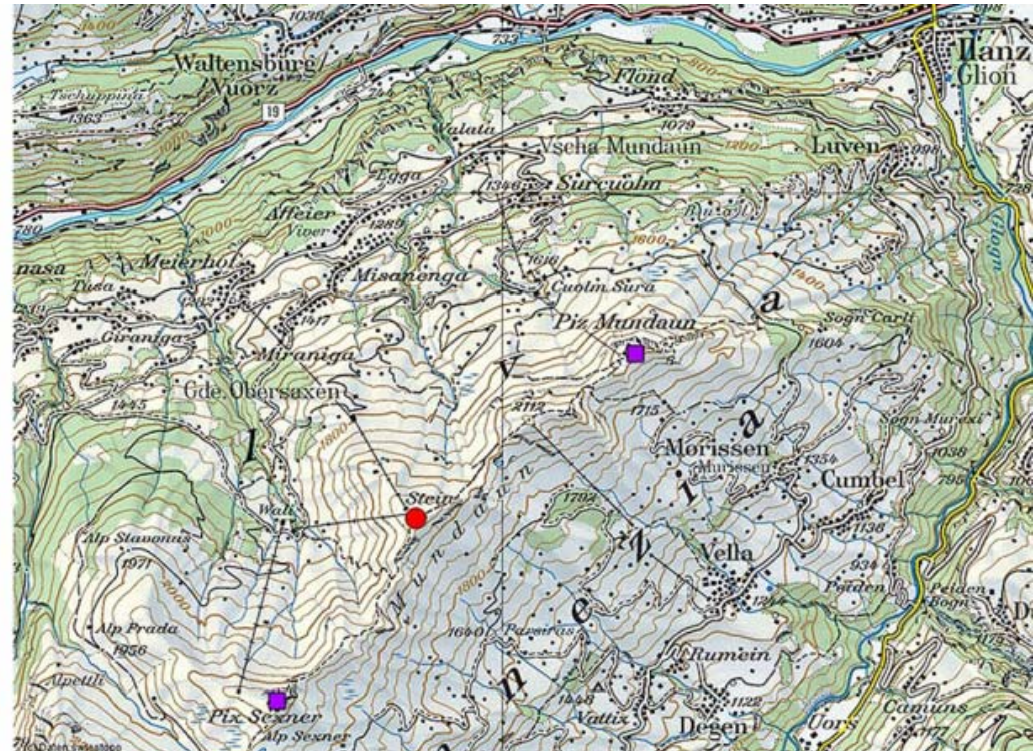
73%

27%

Non-Experts

Map Reading

Panoramic Map vs Topographic Map



Which figure contains a railway?

Map Reading

Experts

74%

8%

16%

2%

Non-Experts

19%

18%

52%

11%

Railway found
both in 2D and 3D
(correct)

Railway found
in 3D

Railway found
in 2D

Not found in
any map

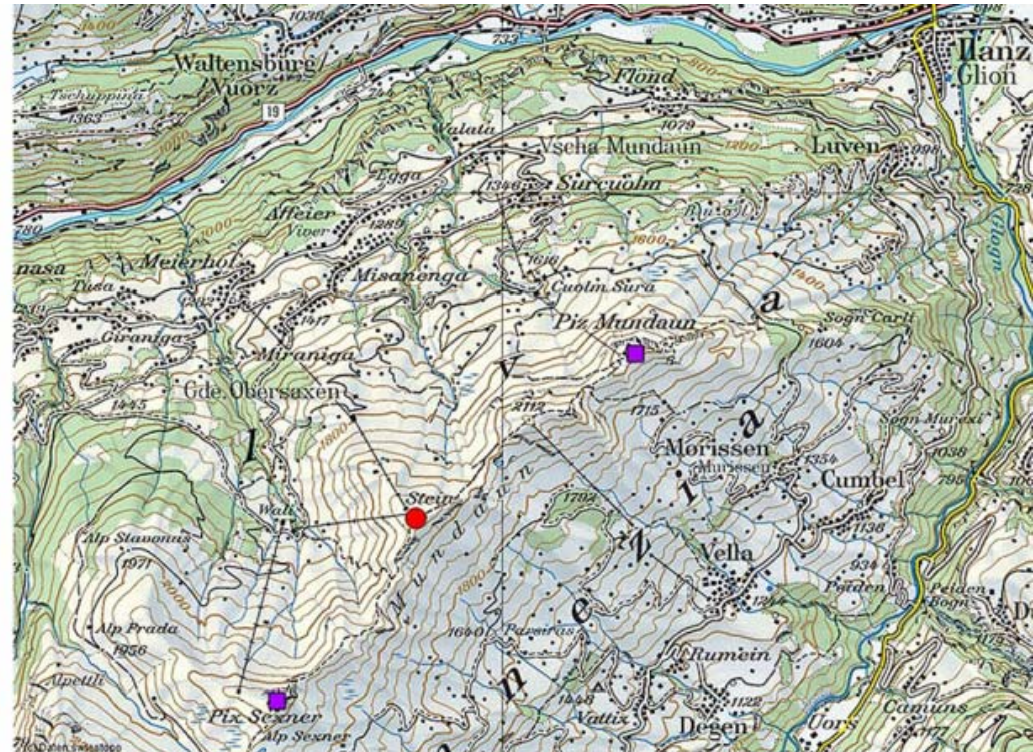
Perception – Map Reading

Summary

	Experts (38)		Non-experts (62)		Total
Perception					
Normal vision	32	84%	54	87%	86%
Red-green confusion	6	16%	8	13%	14%
Influenced by Monochrome	14	37%	35	56%	49%
Not influenced	24	63%	27	44%	51%
Map Reading					
Piz Mundaun	4	11%	17	27%	21%
Piz Sezner	34	89%	45	73%	79%
Railway 3D	3	8%	11	18%	14%
Railway 2D	6	16%	32	52%	38%
3D and 2D	28	74%	12	19%	40%
neither nor	1	2%	7	11%	8%

Map Reading

Panoramic Map vs Topographic Map



Which of the two figures would you use to orientate yourself in winter sports resorts?

Map Reading

Panoramic Map

58%

79%

64%

78%

67%

82%

Topographic Map

42%

21%

36%

22%

33%

18%

Expert

Non-Expert

Male

Female

Right-handed

Left-handed

Computer-Generated Panoramic Maps

Traditional Handmade vs Computer-Generated



Is it possible that the production of traditional handmade panoramas will be replaced by computer rendering methods in the near future?

Computer-Generated Panoramic Maps

Computer-Generated (yes)

Traditional Handmade (no)

57%

43%

47%

53%

Experts

63%

37%

Non-Experts

Software Products / Web Applications

Do you know any?

Yes

32%

No

68%

50%

50%

Experts

21%

79%

Non-Experts

Software Products / Web Applications

If yes, please list them

	Experts (38)		Non-Experts (62)		Total	
Program						Type
Google Earth	10	26%	7	11%	17%	show
Atlas of Switzerland	5	13%	3	5%	8%	show
Terrain Bender	7	18%	0	0	7%	generate
Bryce	4	11%	0	0	4%	generate
Terragen	4	11%	0	0	4%	generate

A possible interpretation of this result is the non-straightforward association of Google Earth with panoramic maps.

Computer-Generated Panoramic Maps

Technical Aspects

	Experts (38)		Non-Experts (62)		Total	
Future						
Computer-generated	18	47%	39	63%	57%	
Traditional handmade	20	53%	23	37%	43%	
Program						Type
Knows some software	19	50%	13	21%	32%	
Doesn't know any software	19	50%	49	79%	68%	
Google Earth	10	26%	7	11%	17%	show
Atlas of Switzerland	5	13%	3	5%	8%	show
Terrain Bender	7	18%	0	0	7%	generate
Bryce	4	11%	0	0	4%	generate
Terragen	4	11%	0	0	4%	generate

Conclusion

- Results are not very surprisingly and support former theses and statements about this subject. There is not a big need to change the look of panoramic maps.
- It is worth mentioning that not all the results are convincing due to the little number of participants for some particular users sub-groups.
- The inclusion of a compass rose could be a useful addition for providing a rough orientation.
- A further option for increasing the attractiveness of panoramic maps could be...



www.thisisdairyfarming.com

“MOO-bile” technology – QR Codes

QR Codes







TuS Germania Schnelsen

Phillips Building (Google Maps)

Eggstöcke
2449 m

Bützi

Berghaus Gumen, 1904 m

Ortstöckhaus, 1772 m

Seblengrat, 1905 m

Oberstafel

Grotzenbüel, 1559 m

Mattwald

Unterstafel

Schwettiberg, 1420 m



Thank you !

Whakapapa Ski Area

Parawhanga 2,751

To New Hut 2,755

Parawhanga 2,751

LIFTS

A Far West T-Bar	H Backgarden Chair
B West Ridge Quad	I Hot Flat Rope Tows
C Watanihi Chair	J Centennial Chair
D Happy Valley Chair	K Wanaka Express Chair
E Double Happy Chair	L Waterfall T-Bar
F Happy Valley Fuseti	M West Ridge T-Bar
G Happy Old Carpet Lift	N The Valley T-Bar

TRAILS

1 Maple Valley Beginner Area	34 Pinnacled Valley
2 Hot Flat Beginner Area	35 Cemetery
3 Undercliff	36 K Road
4 Backgarden	37 Valley Run
5 Teater's Valley	38 The Terraces
6 Teater's Ridge	39 Nova Slide
7 Home Run	40 The Spitznagel (Steep Right)
8 Backgarden's Schists	41 The Spitznagel (Steep Left)
9 Downhill Easy	42 Homestead Valley
10 Lake Superior Bowl (Steep Right)	43 Easy Way Down
11 Lake Superior Bowl (Steep Left)	44 Front Stage
12 75	45 Back Stage
13 Far West Trail	46 Grand Gully
14 Kaitake Paradise	47 Broken Leg Gully
15 Teater's Valley	48 Cousins
16 Teater's Ridge	49 The Waterfall
17 Home Run	50 3rd Waterfall
18 Downhill	51 High Terrace
19 Three Pine Ridge	52 McKenzie's Mistake
20 Teater's Ridge	53 Chair
21 Backgarden	54 The Chimney
22 50m	55 Yankee Face (not to scale)
23 Central Bowl	56 Snow's Bowl
24 Teater's Valley	57 Teater's Headwall
25 The Caul	58 Amphigone Gully
26 Teater's Ridge	59 Yankee Stadium
27 Cat Back	60 Amphitheatre
28 Teater's Ridge	61 Black Magic
29 Knoll Face	62 Dabbings
30 Valley Traverse	63 Screamer
31 Valley Highway	64 The Crucifix
32 Sibley's	65 Hamill Face
33 Gullion	66 Hamill Face

TRAIL SIGNS

- Existed
- Most Difficult Terrain
- Most Difficult Terrain
- Extreme Terrain
- Freezing Terrain

SYMBOLS KEYS

- First Aid
- Toilets
- Cafe
- Vertical Sign
- Information
- Medical Centre
- Snow School

Safety Signs

- Warning
- Caution
- Ski Area Boundary
- Hazardous Area

THE SNOW RESPONSIBILITY CODE

BACKCOUNTRY AVALANCHE ADVISORY

BACKCOUNTRY CHECKLIST

