



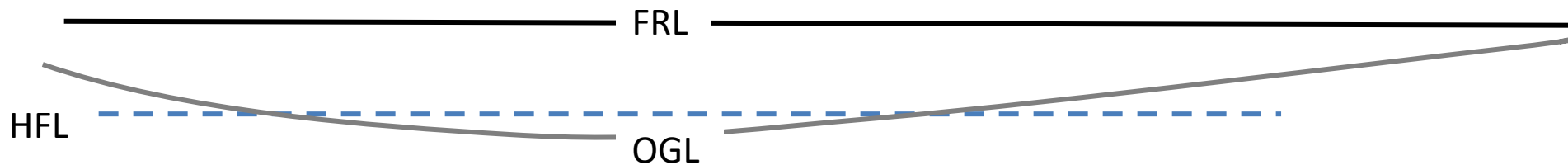
Intercontinental
Consultants & Technocrats

LiDAR in Construction of NHs

“A Roads & Highway
Consultant’s Perspective”.

Importance of Accurate Survey in DPRs

- Cost of Project.
- Time of completion.
- Quality.
 - Slopes to be negotiated and road safety.
 - Flooding and life of road.





MORTH: LiDAR Mandatory for DPRs

- **Accuracy**
 - Horizontal 5cm or better; 50 points per sq m.
 - 5cm and 10 points per sq m for Aerial Survey.
 - Check point Survey using DGPS to establish accuracy.
- **Deliverables**
 - Raw DGPS Data for entire Highway.
 - Point Cloud Data including adjoining areas of interest.
 - Topo Map 1:1000
 - Contour Map at 50 cm interval.
 - Cross Section of Highway in *.dwg format.
- **Type**
 - Mobile LiDAR or better Technology.
 - Aerial Mobile LiDAR



Recent LiDAR Projects by ICT

	Project	Location	Length (Km.)	Type of Survey	Remarks
1	Nakuru-Nyahururu-Nyeri-Marua Road (B5)	Kenya	192	Aerial Li DAR	Road Survey
2	Shimla to Matur of NH-88	Himachal Pradesh	223	Mobile Li DAR	Road Survey
3	Development of Economic Corridors : Package-5	Gujarat & Madhya Pradesh,	350	Mobile Li DAR	Road Survey
4	Development of Economic Corridors : Package-6	Madhya Pradesh & Maharashtra	350	Mobile Li DAR	Road Survey
5	Karwar-Gajendragad	Karnataka	318	Mobile Li DAR	Road Survey
6	Jalandhar-Bhatinda-Ajmer	Rajasthan and Punjab	25	Drone Survey	For developing Green Field Alignment.
7	Physical Condition of the NH Toll Operatate Transfer (TOT)	Covering 5 States	650	Mobile Li DAR / Drone Videography	Check of condition of Road and Toll Plaza
Total			2108		



Experience of Employing LiDAR

- Benefits
 - Saving of Cost and Time.
 - Has the required accuracy coupled with Ground Survey.
 - Ability to re-visit data for more information- 3D images.
- Need for Ground Survey not Eliminated (60:40).
 - Fixing of Control Points.
 - Covering Shadow Areas.
 - Culverts etc. hard to fix from Cloud Point Data.
 - Rivers and Nalas and Heavy Vegetation need ground survey.
- Problems in Hilly Terrain
 - Many stretches had to be repeated manually.
 - High error where there is heavy vegetation and 'U' Turns to negotiate steep slopes.



The Way Forward

- Use of LiDAR is here to stay.
- Need to improve quality and speed of processing Cloud Point Data.
- Better understanding of
 - LiDAR functions and limitations by consultants.
 - Terrain variables to be better understood by Data Analysts.
- Component of Ground Survey must progressively reduce.
- Cost must be optimized with time.
- **Build up a data bank to avoid repeated survey.**

Thank You



