

International Line Iceberg Display

Product Owner Reference

Mr. Cline

US Coast Guard Research and Development Center

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Team Members

- Owner – Mr. Cline
 - Advisor – Dr. Mraz
 - Subject Matter Expert – Dr. Kessler
 - Subject Matter Expert – Mr. Gold
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- 2/c Christopher Rosselot
 - 2/c Luke Arsenault
 - 2/c Hayden Carter
 - 2/c Maylis Yepez
 - 2/c Thomas Hardy

Product Elevator Pitch Statement

- L.I.D takes daily information transmitted from the NAIS (North American Ice Service), converts LAT/LONG position of iceberg risk boundaries into a usable format of contour lines which then will be sent out to mariners to be plotted on commercial navigation equipment.

Product Vision Board

| Target Customer | Needs | Product | Value |
|-----------------|-----------------------------------------------------|-------------------------------------------------|------------------------------------------------------------------|
| Mr. Cline | Validation of output | The code to run the software | Continual development of software to support the missions of IIP |
| Public Mariners | Save time and feel safe when navigating by icebergs | Software compatible with AIS/Nav system | Keep local mariners safe, and substantial time saving |
| NAIS | Quick dissemination of information from NAIS | Software that's ready to publish new data daily | Fewer errors with conversion of daily information |

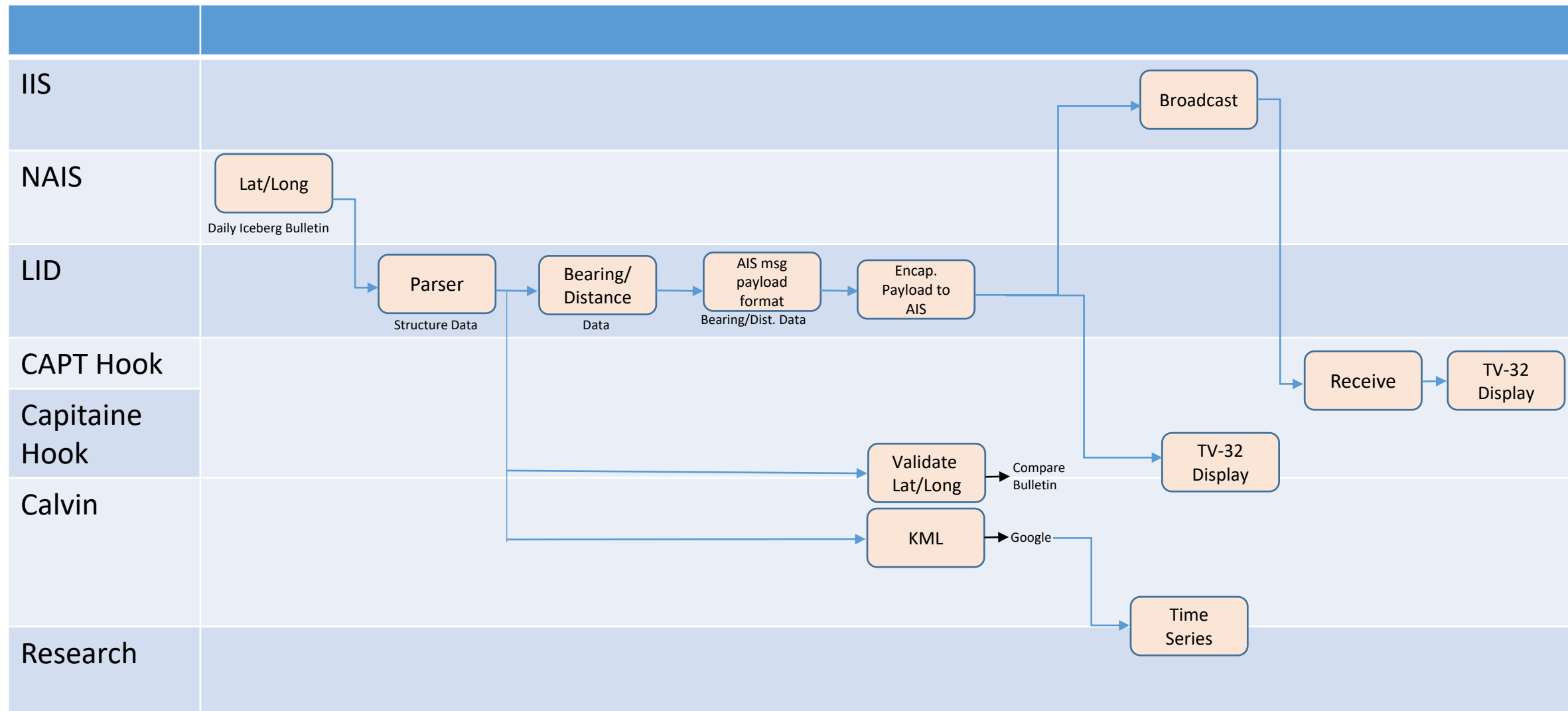
Customer Persona

| Profile | Goals | Persona Name |
|--------------------------------------------------------------|--------------------------------------------------------|--------------|
| ORCA at CG RnD Center | Demonstrate Practicality | Calvin |
| Mariners traversing the North Atlantic | Have program to keep them safe | Captain Hook |
| Organization of people disseminating information on icebergs | Have a software to invert text file into mappable data | Big Brother |

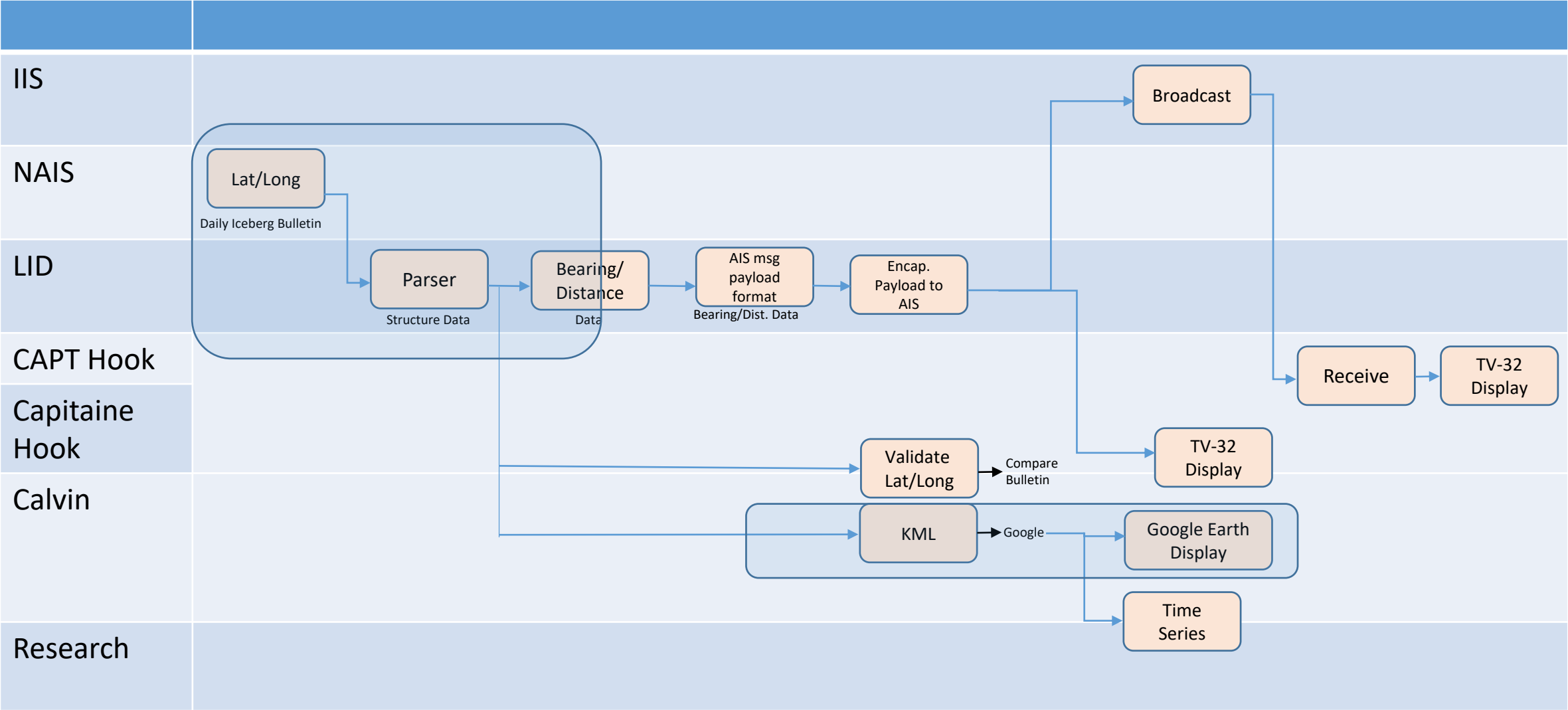
Impact Mapping

| Goal | Actor | Impact | Deliverable |
|---------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Intaking daily risk contours, converting to AIS payload | Big Brother | Progress in an ongoing project and success in the subproject | Working Program |
| | Calvin | | Software with mappable data |
| | Captain Hook | Automated delivery of information, allowing better situational awareness of iceberg risk area | Display on true navigation systems domestic and international |
| | Capitaine Hook | | Display on Portable Device (Laptop) |
| | CAPT Vann | | |
| | Iceberg Chasers | | Display on internet |
| | Risk Takers | Informed decisions made for risk taking | Density of icebergs within a specific region |
| | Casual File Uploaders | Ability to use data in commercial systems (google earth) | File Conversion to kml |
| | Climate Change Enthusiasts | Access to information to bolster research/arguments | Historical data, trends, moving graph, access from internet, display on navigation systems and portable devices |
| | Polar Research Fleet | | |

Activity Diagram



Activity Diagram – Sprint 1



Initial Sprint Efforts to demonstrate ingesting data and producing intermediate decimal data for Bearing/Distance calculations.

Sprint 1

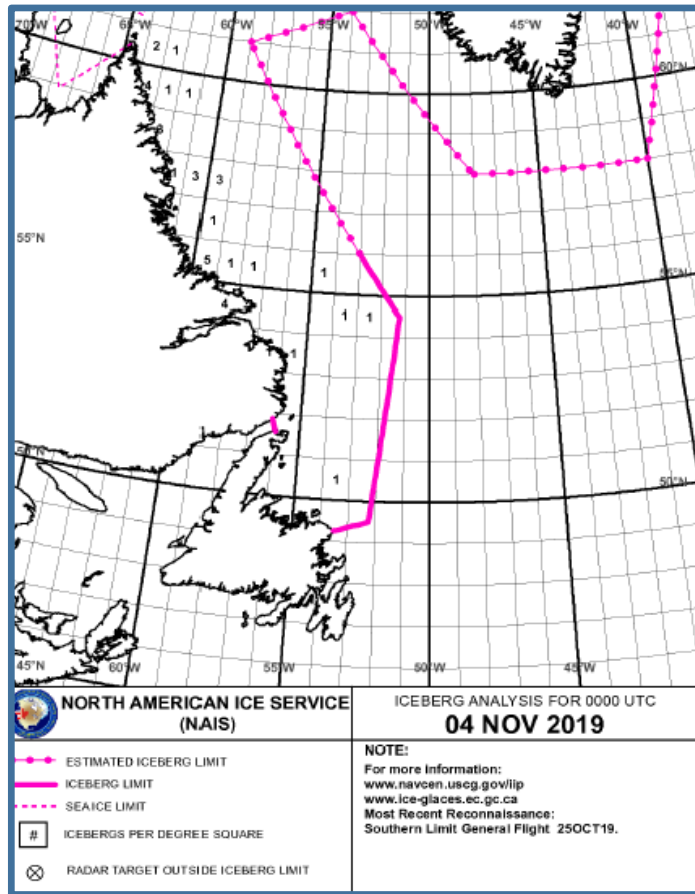
•Date: 30OCT19 Sprint: 1-2

Team: LID

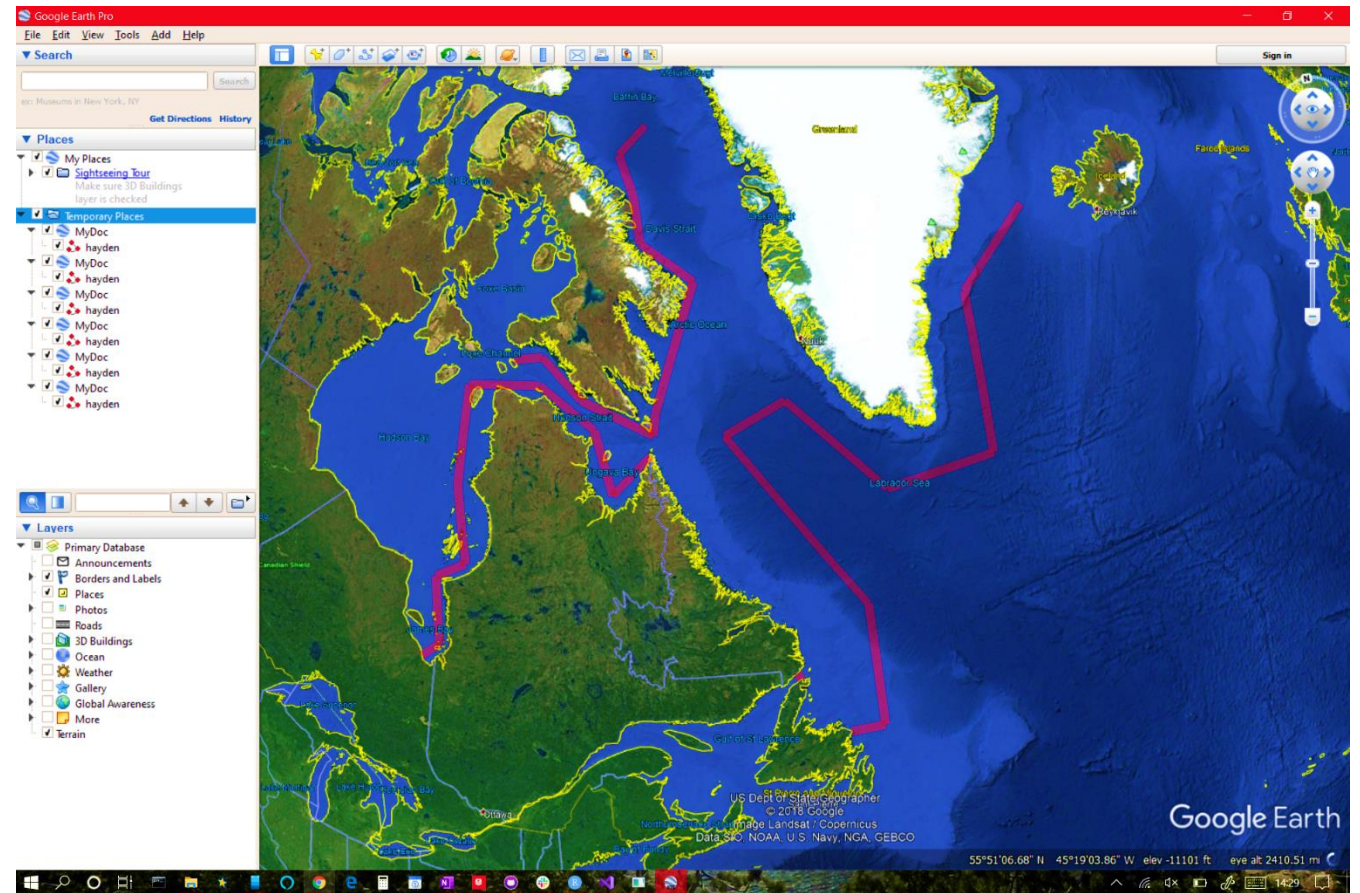
| | Task | Priority | Est Time | Assigned | Actual Time | Percent Complete |
|----|-------------------------------------|----------|----------|---------------------------|-------------|------------------|
| 1 | Create our own Bulletin | 5 | 1 | Maylis Yepez | 1 | 100 |
| 2 | Use Google Earth to Load A KML file | 7 | 2 | Hayden Carter | 2 | 100 |
| 3 | Bulletin Acquisition | 7 | 3 | Christopher Rosselot | 3 | 100 |
| 4 | Data Parser | 10 | 4 | Tom Hardy | 6 | 100 |
| 5 | KML File Creation | 8 | 4 | Hayden Carter | 5 | 100 |
| 6 | Distance/Bearing Research | 6 | 3 | Maylis Yepez | 3 | 80 |
| 7 | GitHub Operational | 9 | 2 | Chris Rosselot | 2 | 100 |
| 8 | Tv-32 Research | 7 | 3 | Luke Arsenault | 3 | 80 |
| 9 | Integration between 3 classes | 10 | 2 | Tom Hardy, Chris Rosselot | 2 | 100 |
| 10 | Backup KML File | 4 | 2 | Luke Arsenault | 3 | 100 |

Tasks performed to provide Google Earth representation of Iceberg Risk limits.

Sprint 1



Bulletin Image of NAIS website



Transformation to Google Earth

Visual Validation of transformation of coordinates to Google Earth KLM.

Sprint 1

LATEST ICEBERG BULLETIN

1. NORTH AMERICAN ICE SERVICE (NAIS)
ICEBERG BULLETIN 050001Z NOV.

2. ICEBERG LIMIT ALONG TRACKLINE JOINING
49-15N 053-30W, 49-15N 051-30W,
54-00N 051-00W, 56-00N 053-00W.

3. ESTIMATED ICEBERG LIMIT ALONG
TRACKLINE JOINING

56-00N 053-00W, 61-00N 059-00W,
62-00N 054-00W, 58-00N 048-00W,
58-00N 040-00W, 64-00N 037-00W,
66-00N 028-00W.

4. WESTERN ICEBERG LIMIT ALONG TRACKLINE
JOINING

51-52N 056-05W, 51-34N 055-55W.

5. SEA ICE LIMIT ALONG TRACKLINES
JOINING:

A. 63-40N 077-00W, 63-55N 074-25W,
62-25N 070-35W, 61-10N 064-30W,
62-00N 064-20W.

B. 60-25N 064-45W, 58-55N 067-35W,
61-20N 069-15W, 62-50N 074-15W,
62-25N 080-35W, 58-30N 079-45W,
55-35N 078-10W, 54-50N 080-15W,
52-10N 079-20W, 51-30N 080-30W.

C. 62-00N 064-20W, 66-55N 060-40W,
68-30N 066-05W, 70-25N 067-10W,
72-10N 069-35W, 73-25N 066-25W.

...

9. CANCEL THIS MSG 060001Z NOV 19.

Original Iceberg Data
Lat – Long format

49.25,-53.5 49.25,-51.5 54,-
51 56,-53 56,-53 61,-59 62,-
54 58,-48 58,-40 64,-37 66,-
28 51.866666,-56.083333
51.566666,-55.916666
63.666666,-77 63.916666,-
74.416666 62.416666,-
70.583333 61.166666,-64.5
62,-64.333333 60.416666,-
64.75 58.916666,-67.583333
61.333333,-69.25
62.833333,-74.25
62.416666,-80.583333 58.5,-
79.75 55.583333,-78.166666
54.833333,-80.25
52.166666,-79.333333 51.5,-
80.5 62,-64.333333
66.916666,-60.666666 68.5,-
66.083333 70.416666,-
67.166666 72.166666,-
69.583333 73.416666,-
66.416666

Transform to Decimal
Coordinates

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        <width>10</width>
      </LineStyle>
      <PolyStyle>
        <color>501400fa</color>
      </PolyStyle>
    </Style>
    <Placemark>
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      <visibility>false</visibility>
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        <tessellate>true</tessellate>
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-51.5,49.25
-51,54
-53,56</coordinates>
      </LineString>
    </Placemark>
  </Document>
</kml>
```

Google Earth KML
Line Segment
Representation

Sprint 2