

Large-scale Salmon Monitoring and Evaluation: It Can Be Done!

The Northeast Pacific Experience

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9 February 2016

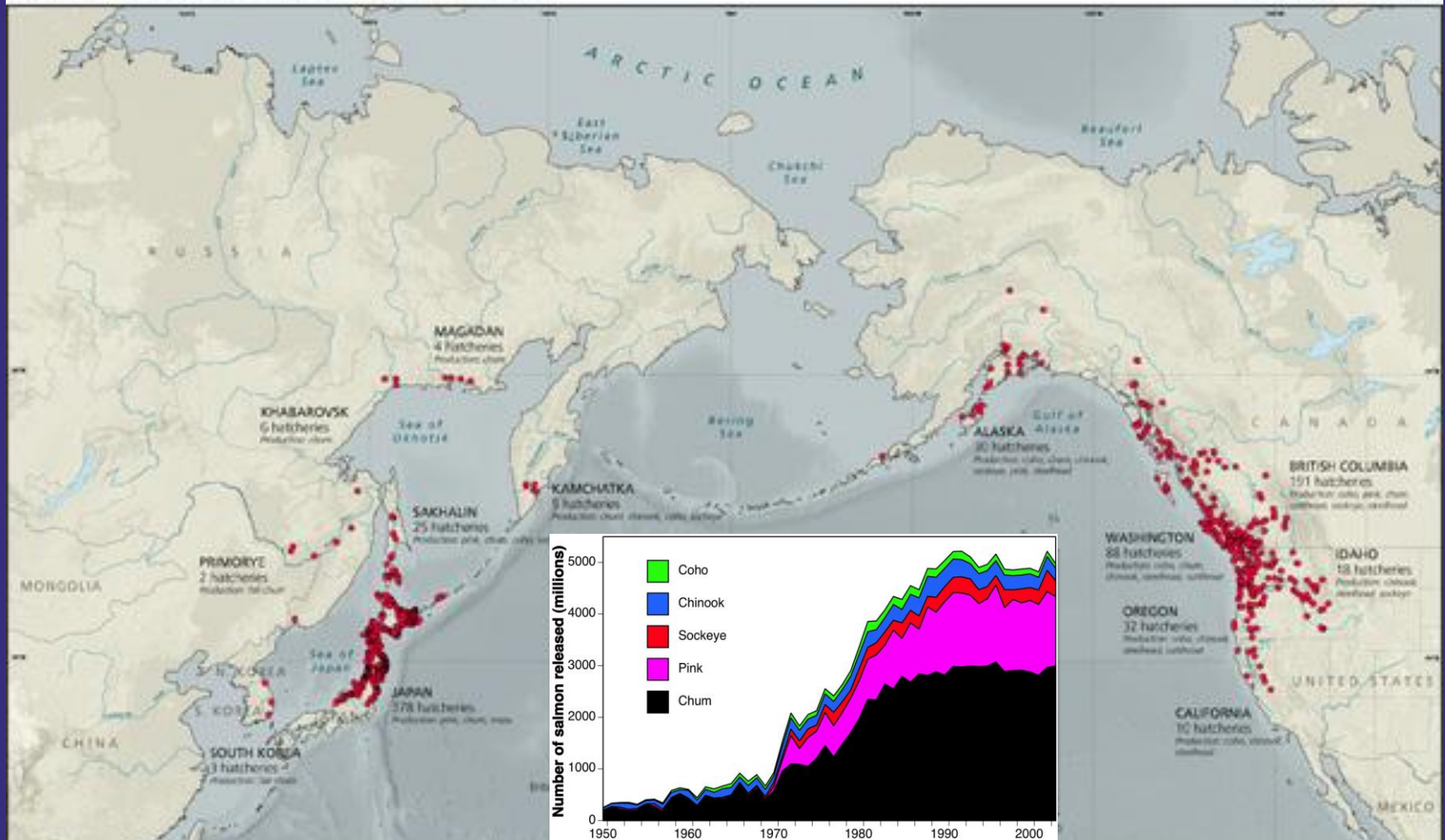


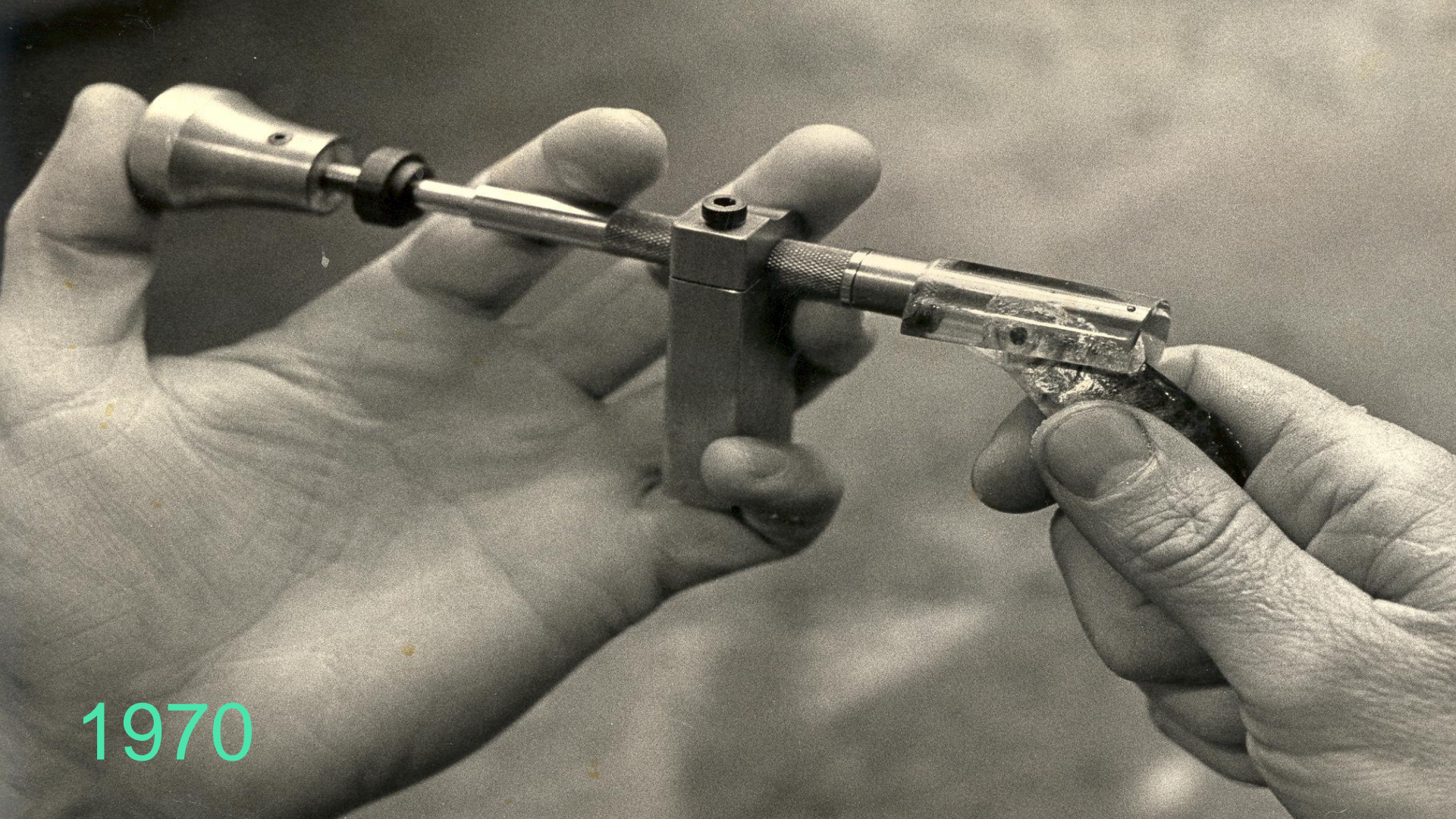
OCEAN OUTCOMES



Salmon Hatcheries of the North Pacific

© 2005 State of the Salmon, a joint program of Wild Salmon Center and EcoTrust



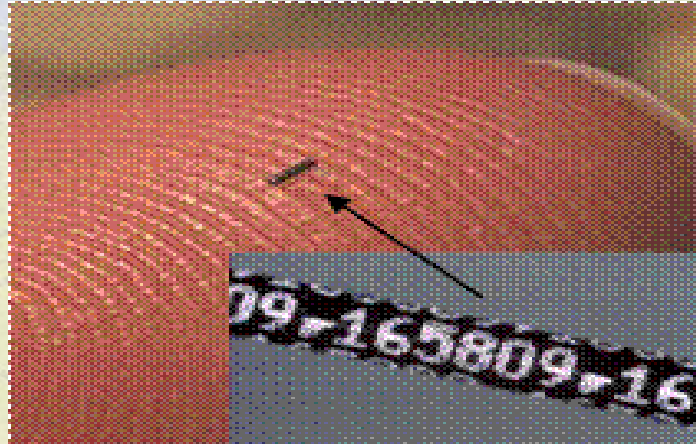


1970



Coded Wire Tag (CWT)

- Very Small - 0.25mm x 1.1mm
- Stainless Steel
- Benign
- High Retention
- Magnetized
- Decimal Code
- Inexpensive



Pacific Salmon Migration Patterns



Figure 1

Caught Far From Home: Pacific Salmon Treaty Managed Fishery Chinook Catch Composition 1999 - 2010

Kurt Beardslee, map by Andrew McAninch

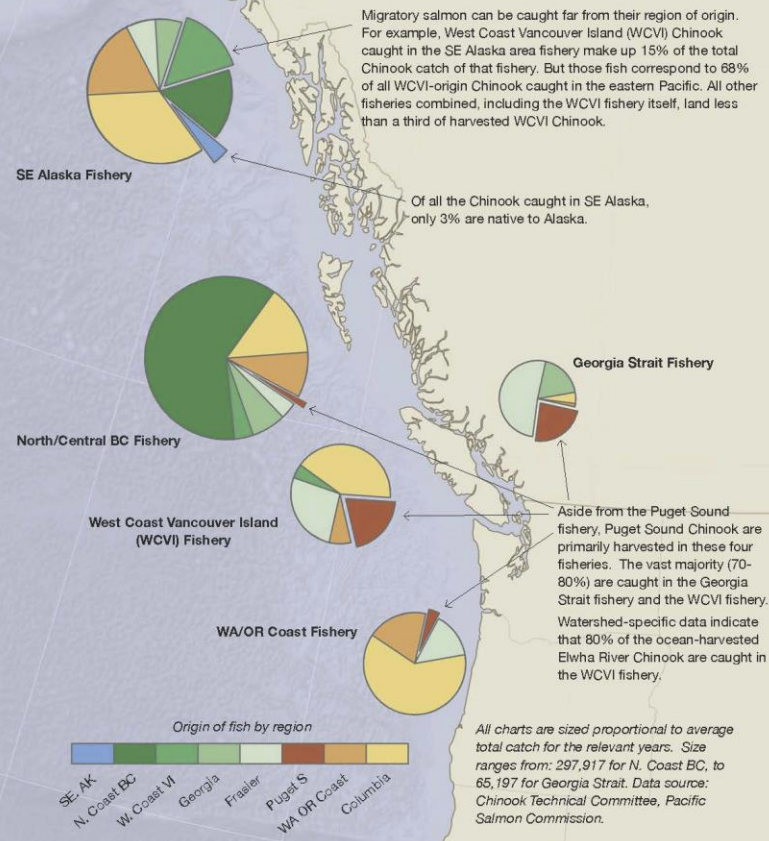




Photo courtesy of Alaska Seafood



ESA

- ~ 20 Endangered and Threatened Salmon and Steelhead Listings

The image shows two salmon, likely rainbow trout, against a light blue background. The top salmon is positioned horizontally, and the bottom salmon is positioned vertically. Both fish have a white circular marker on their dorsal fin, labeled 'Hatchery Indicator'. The bottom salmon also has a white circular marker on its adipose fin, labeled 'Adipose fin clip (Ad)'.

Hatchery
Indicator

Adipose fin clip
(Ad)

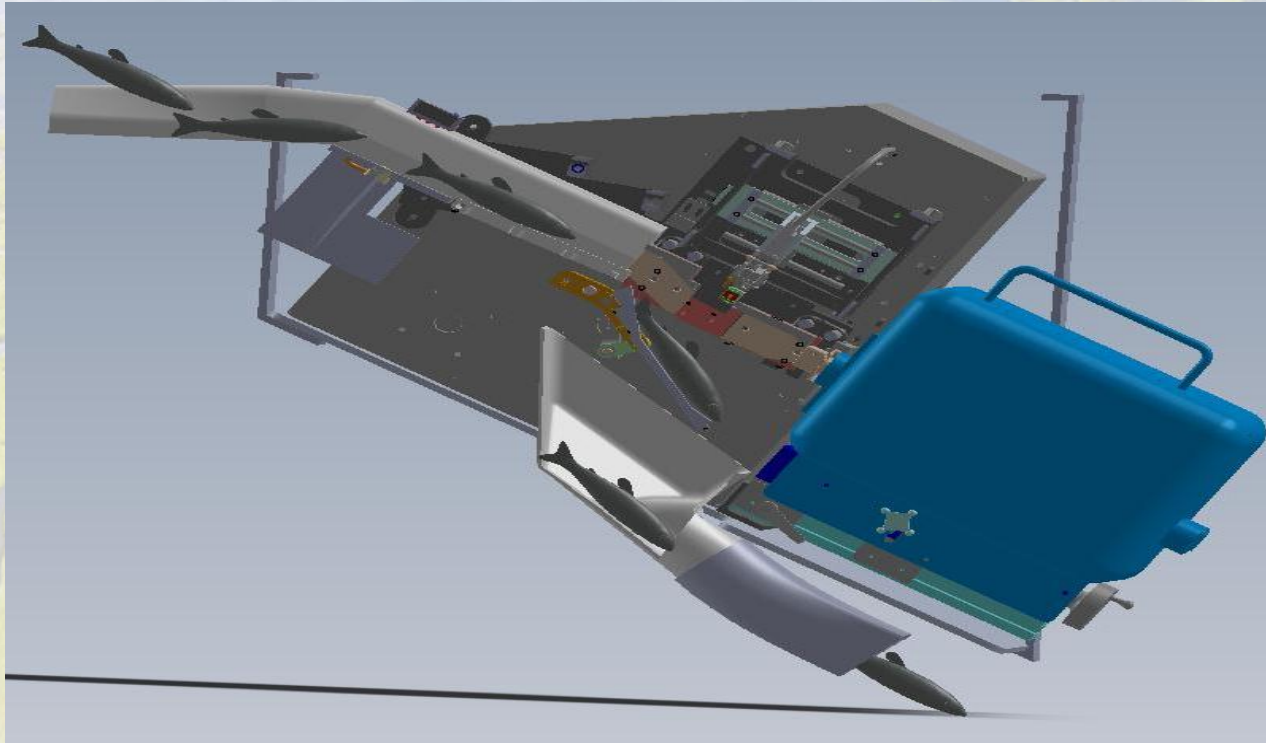
Size of Current Program

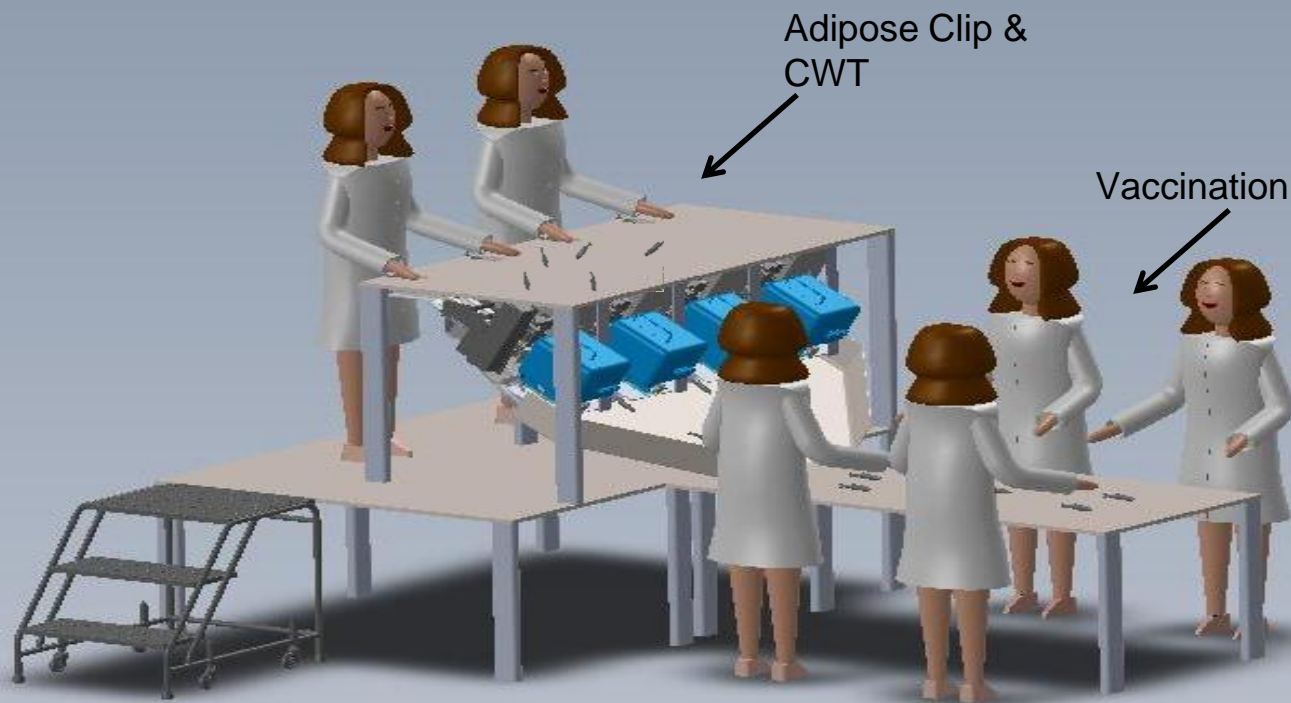
- > 210 million chinook and coho released per year with some form of mark +/-or CWT
- The combinations are Ad only, Ad+CWT and CWT-only
- Coastwide mark and tag data clearinghouse stores and provides access to information on releases and recoveries from all jurisdictions

What About the Norway Case?

- Magnitude appears similar ... ~350 million/yr
- The need to estimate and reduce risks from farmed fish escapes is widely understood
- Farmed salmon already anesthetized and vaccinated – straightforward to integrate marking and tagging into current operations

Semi-Automated Fish System - Atlantic Salmon Parr





What About Cost?

- Ad+CWT relatively cheap: $\sim \$40-50$ per K
- Rough cost example :
 - *At 5 kg per farmed salmon (market size), tagging cost = 360–450 NOK per 5000 kg, or $\sim 0.07-0.09$ NOK per kg*
 - *Compared to 30 NOK per kg farmed production cost, Ad-CWT represents a small incremental cost of $\sim 0.2 - 0.3\%$*

Conclusion

It can be done!

Thank you!

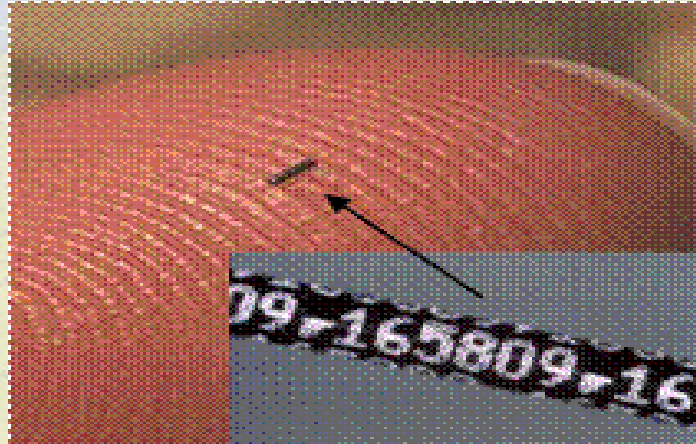


Learn more at oceanoutcomes.org



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Accidental Ingestion of CWT

- Tag placement
- Tag size & shape
- Tag material – benign stainless steel
- Tag ingestion probability

