

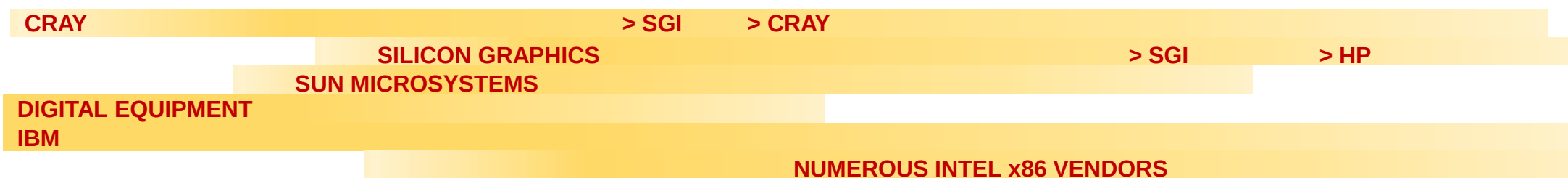
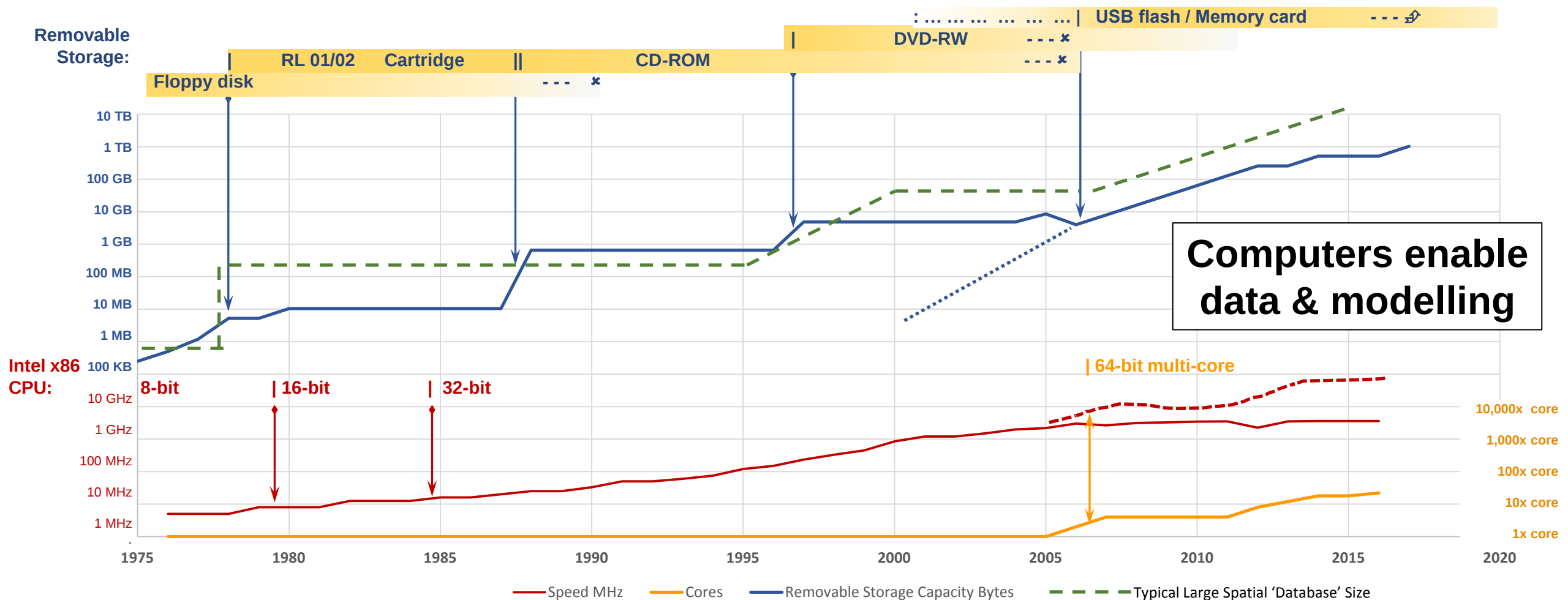
Re-inventing the Map

Experiencing New Zealand: past – present – future

Robert Gibb

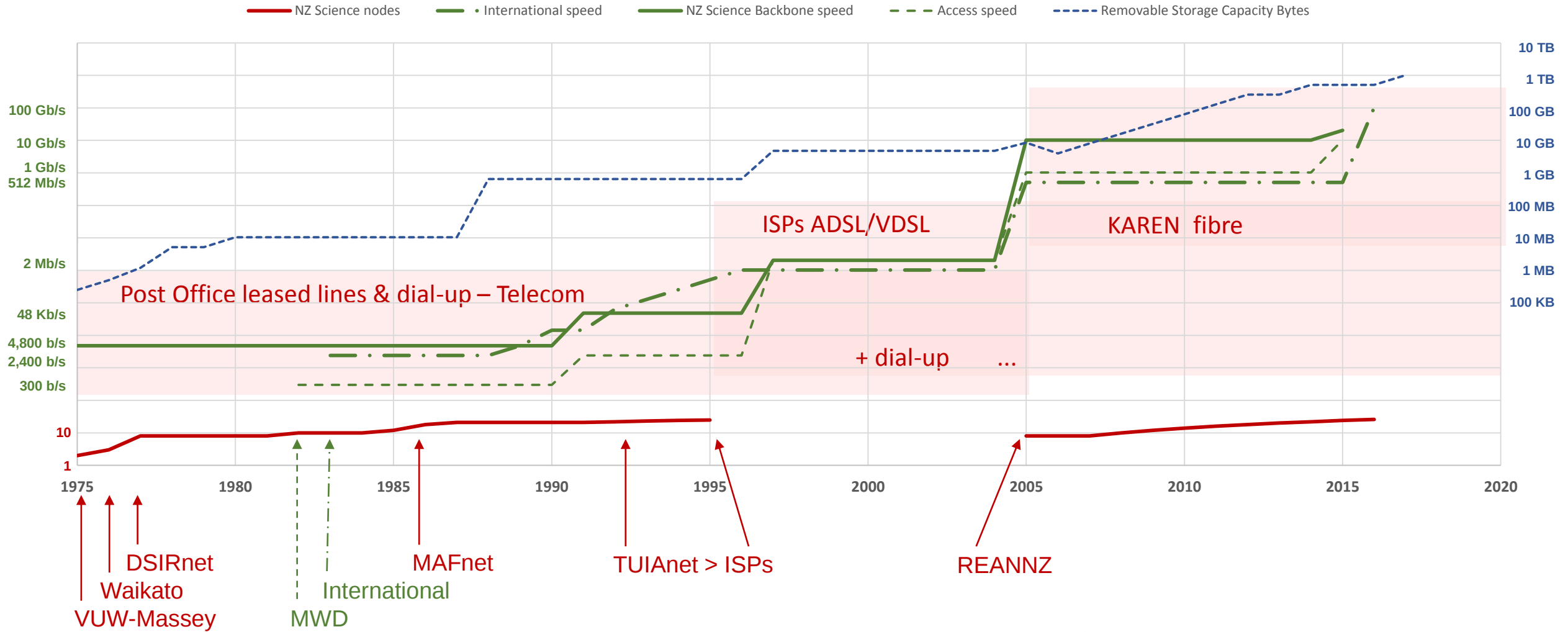
Landcare Research 12 October 2016 LINK Seminar @ MPI





Networks enable communication, sharing & collaboration

NZ Science Network



Standards enabling collaboration & interoperability

- User's s/w
- Domain design
- Program API
- Data theory
- File Formats
- Road Rules
- Hardware

- DGGS theory
- TimeSeriesML
- WaterML
- IndoorML
- ANZSoilML
- Earth Observation
- CityGML

- GeoSciML
- Observation & Measurement theory
- Web features & Web Processing API
- GML - Geographic data files

Web Map API

OGC Geospatial data theory

HTML web page file

HTTP web service protocol

CD/DVD file system standard

UNIX-PC-MAC file mount & print

Interchangeable floppy disk file system

Mail exchange, File transfer, Telnet service protocols

TCP/IP network transport standard

OGC – Open Geospatial Consortium

ISO – International Standards Organisation

W3C – World Wide Web Consortium

Community RFCs

IETF - Internet Society

Industry competition /

Collaboration

/ IEC - International Electrotechnical Commission



Modelling – desktop to cloud to supercomputer

RIOS python raster

Google Earth Engine

R Spatial

Python spatial

OSGeo: OpenLayers

Google Earth

Google Maps

PYXIS Innovation: WorldView DGGS

OSGeo: GeoServer

OSGeo: MapServer

OSGeo: QGIS + GRASS

OSGeo: QGIS

MapInfo

GenaMap

ARC/INFO

pcArc/Info

ArcGIS

MWD: LADEDA

ERDAS

GRASS

DSIR: EPIC

Web GIS

Vector GIS

Image Processing



Putting it all together:
enables automation,
communication

Sentinel-2 pipeline
Lidar pipeline
LandSat pipeline
RIOS python raster
OSGeo suite
NeSI.1: IBM
6,000x cores
NeSI.2: ??
????x cores
Soils-mobile
Antarctic Portal
Snap-online
OurEnvironment
maps.scinfo.org.nz
OSGeo suite
x86 servers

SGI
100x cores

EcoSAT software

DEM script

ERDAS +SDK

LUNZ

x86 workstations

ARC/INFO

ArcGIS

SUN Microsystems workstations & servers

LADEDA

DEC mVAX II

GUILD

GenaMap

NZ & Antarctic soils portals

MWD: IBM mainframe

1975

1980

1985

1990

1995

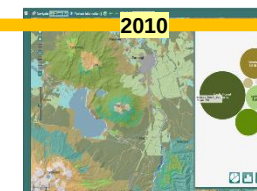
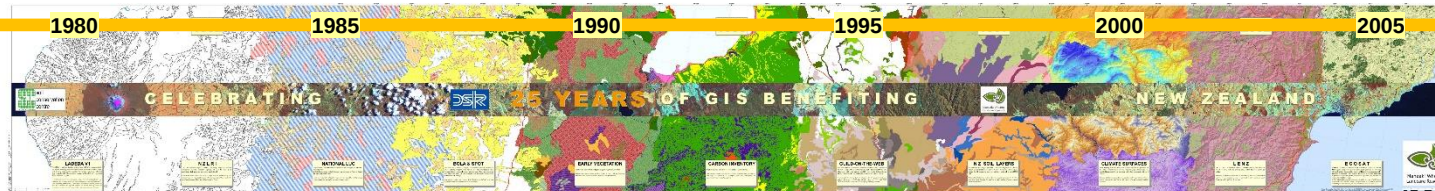
2000

2005

2010

2015

2020



Putting it all together: knowledge from data & modelling

Satellite image cube + Big Data
LandSat + IoT
+ Sentinel >>

DGGS theory

Antarctic Env Dom

Antarctic ED 2+

LENZ engine 2

& 3

LENZ

1m Northland

LENZ engine 1

1m GWRC DEM

SPDlib Lidar engine

LUM 1990

(2000)

2008

2012

Land Use NZ

LCDB4 base

LCDB2 base

LCDB3 base

RIOS python raster

OSGeo suite

EcoSAT

25m & 15m DEMs

NeSI.1: IBM
6000x cores

NeSI.2: ??
??x cores

ERDAS +SDK

x86 workstations

ARC/INFO

LADEDA

DEC mVAX II

SUN Microsystems workstations & servers

MWD: IBM mainframe

1975

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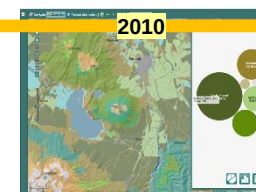
2000

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2010

2015

2020



?

NZLRI field mapping commences
*to support transparent allocation of
Ministry of Work's erosion control subsidies*

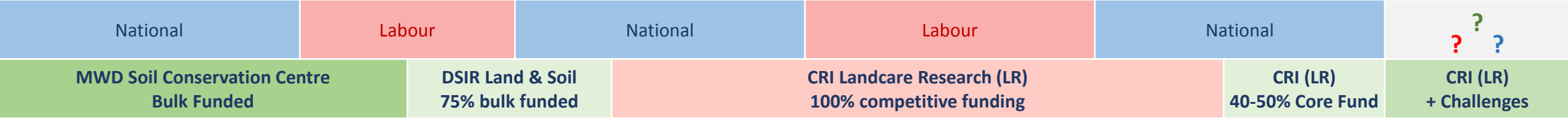
- Rogernomics: *privatisation & user pays***
- *MoW SCC becomes DSIR Land Resources*
 - *data becomes a source of quick revenue*

CRI's formed under companies act
expected to compete for all funding

LINZ dramatically lowers data charges
reduces cost of topographic data

**Putting it all together:
Science & Policy**

NZGOAL + CC
encourages open data
CRI's core funding
some collaboration
Challenges
all collaboration



1981-2016

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For much of this period I was
either the provider of the infrastructure
or the Informatics Team leader.
So nothing could have been accomplished
without the inspiration, imagination
and hard work of the whole team.

Many thanks to all of you !

