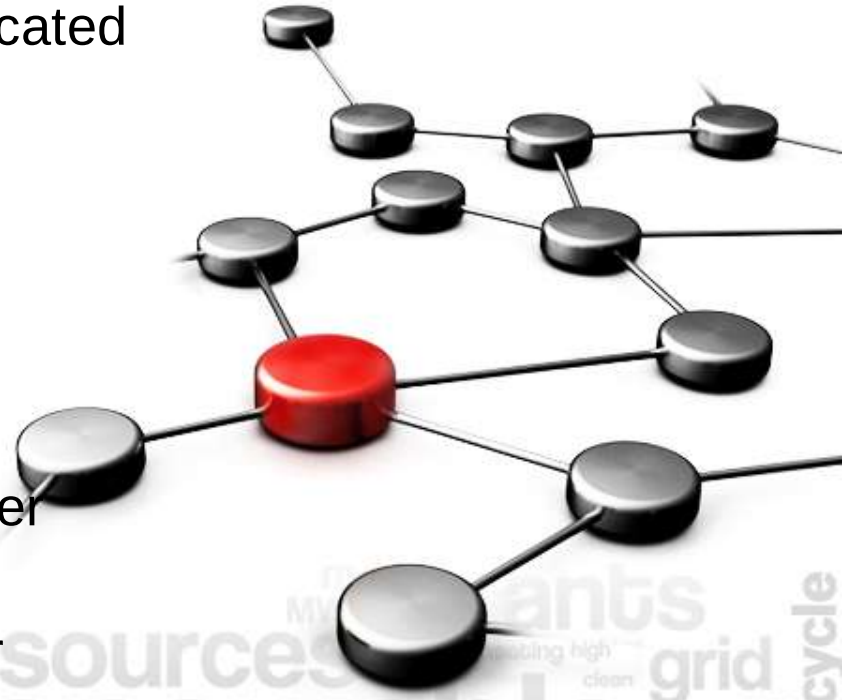

MANTRA ENERGY
ERC technology
MANTRA ENERGY ALTERNATIVES LTD
- a green chemicals company -

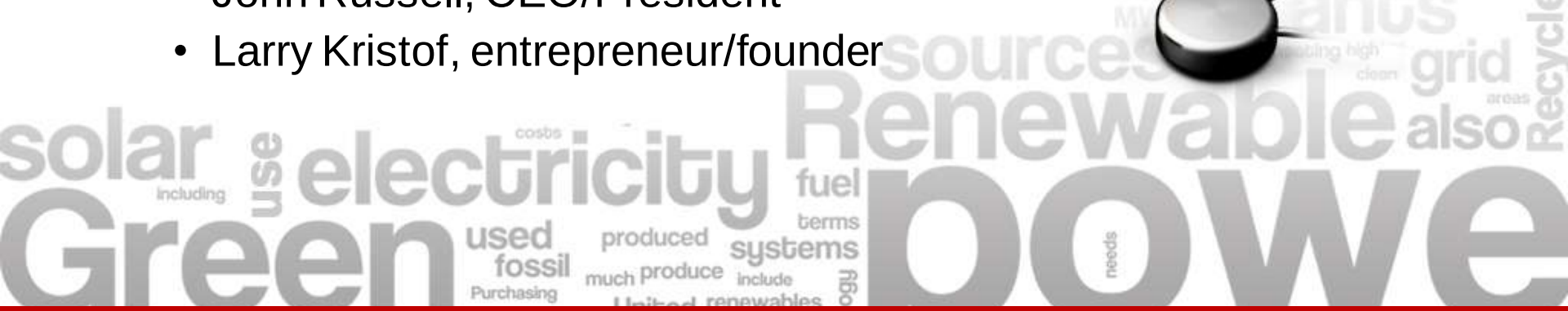
ME'S OBJECTIVE

- To commercialize the ERC technology
- To become a world leader in production of high value, Green chemicals and building materials

ORGANIZATION, STRUCTURE AND TEAM

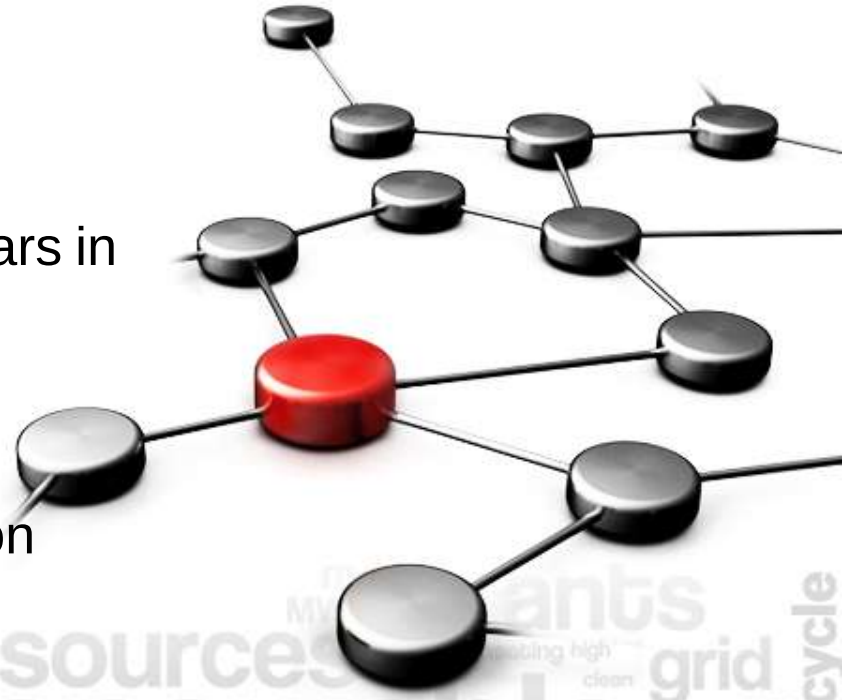
- MVG is the parent co., started 3 years ago
- ME, a wholly owned subsidiary, is dedicated to our leading technology ERC
- The team:
  - Professor Emeritus Colin Oloman, CERC, UBC
  - Norman Chow, P.Eng, Head of Research
  - Joey Jung, P.Eng, Head Researcher
  - John Russell, CEO/President
  - Larry Kristof, entrepreneur/founder





INTELLECTUAL PROPERTY, PATENTS

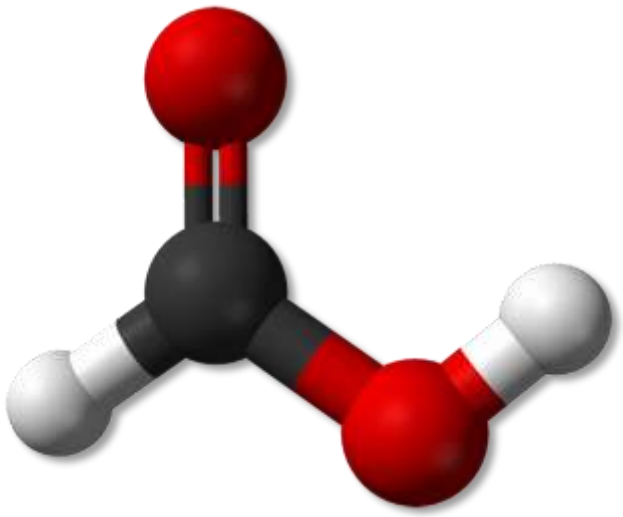
- Initial patent pending WO 2007/041872 A1
  - By Prof. Colin Oloman, inventor Clean Energy Research Centre, University of BC
- Two patents immediately from our 2 years in the lab.
- A number of patents will arise from our development plans
- Strategy: by partnering and collaboration



ERC EXPLAINED

- Electrochemistry is established, accepted
- Inputs: CO_2, H_2O and electrical power
- Prime output: formic acid, the strongest organic acid
- Opportunity: a radical approach to dealing with CO_2 (GHG) for industrial emitters.
- Profitable!

BUSINESS OPPORTUNITY



- Existing formic acid market $1 billion
- New applications for formic acid identified
- Additional products beyond formic acid can be developed
- Whole new, green industries will arise around these old and new products

THE COMBINED MARKET

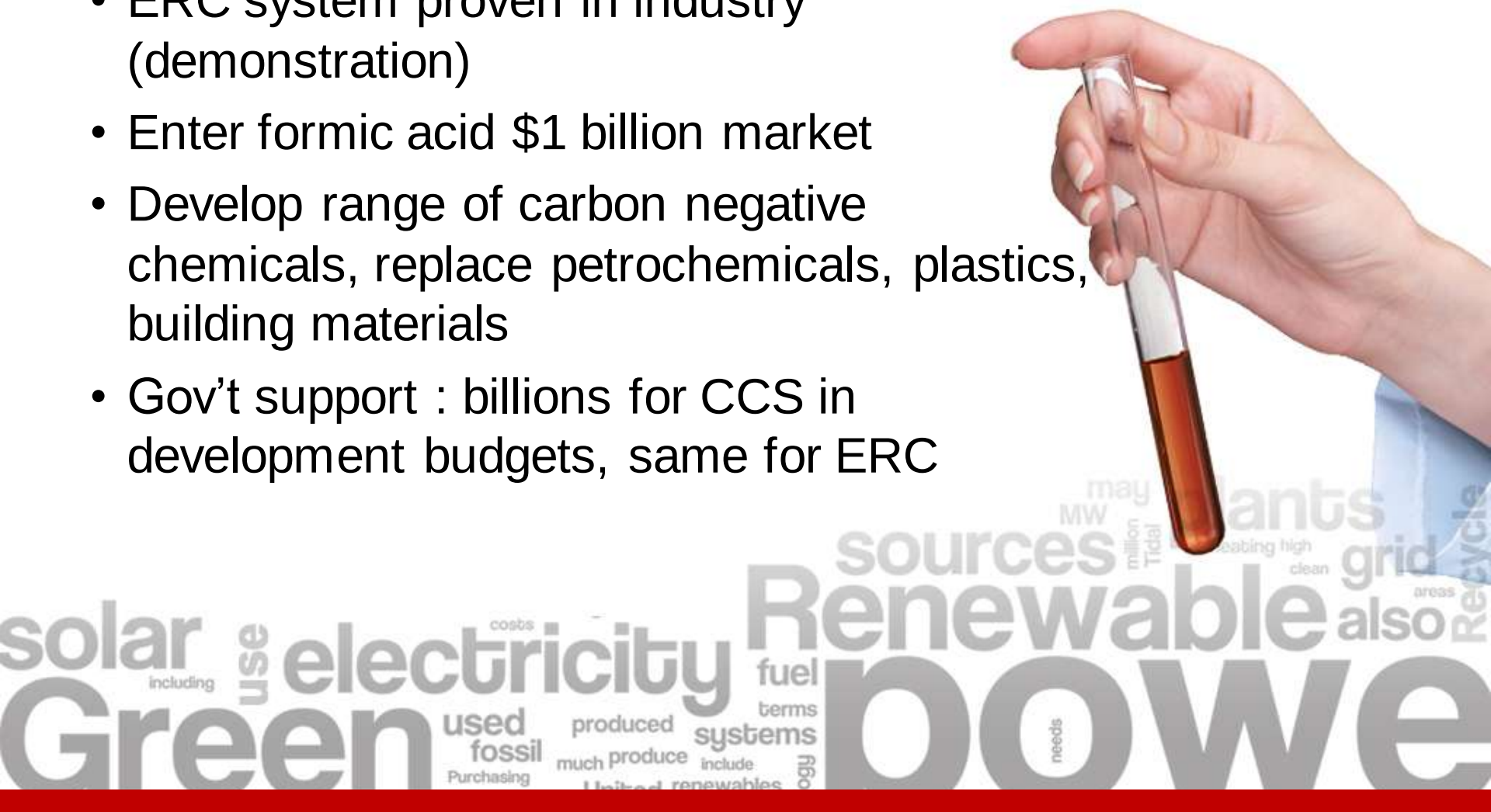
- ERC new and old products
  - Formate and formic acid
  - New applications of formic acid
  - New products beyond formic acid
  - **Combined markets = $10s of billions**
- As we learn more – each market will be quantified
- New industries like Green plastics can be built on formic acid
- Market size indicator: plastics take **5%** of all US oil demand (or **19.5 million** bbl/day in 2008)

ERC PROJECTS NOW AND UP COMING

- 1st demonstration project in Korea at power utility site
  - leading to inclusion of ERC in new coal power plant
- Projects up coming :
  - North America: BC project in hand; searching for a suitable US partner

BROAD DEVELOPMENT PLAN

- ERC system proven in industry (demonstration)
- Enter formic acid $1 billion market
- Develop range of carbon negative chemicals, replace petrochemicals, plastics, building materials
- Gov't support : billions for CCS in development budgets, same for ERC



WHERE DOES THE NECESSARY MWe COME FROM?

- Energy requirement: clean, inexpensive, available, near to point of use
- Today: Nuclear, hydro
- Exotic: Geothermal, off-peak renewable
- In 10 years our prime source will be cogeneration or WH2E