

The Right Navy for the Right Reasons at the Right Cost

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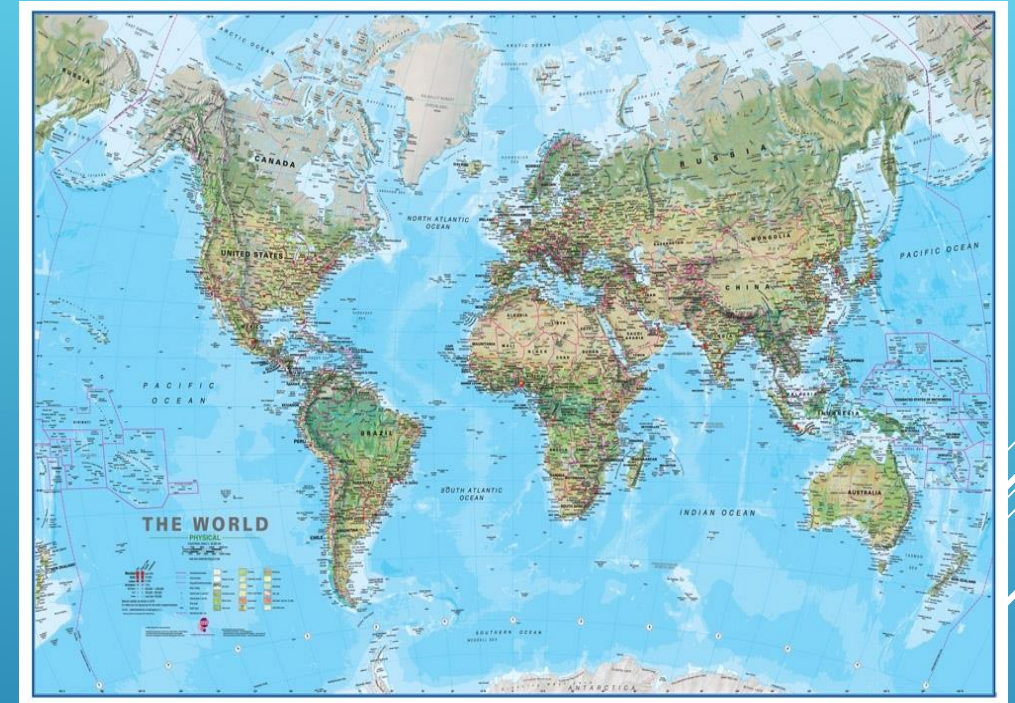
21ST CENTURY NAVAL POWER

- *Global Maritime Security*
- *A Grand Strategy*
- *Naval Roles, Missions & Concepts*
- *Regional Maritime Trends*
- *Naval Programs and the Future of Naval Construction*

TODAY'S JOURNEY



- ▶ *Maritime Border & Sovereignty Disputes*
- ▶ *Economic Exclusion Zone Violations*
- ▶ *Maritime Criminal Networks*
- ▶ *Freedom of Navigation Restrictions*
- ▶ *Environmental Protection Policies*
- ▶ *Climate Change*
- ▶ *Great Power Posture & Presence*
- ▶ *Great Power Conflict*

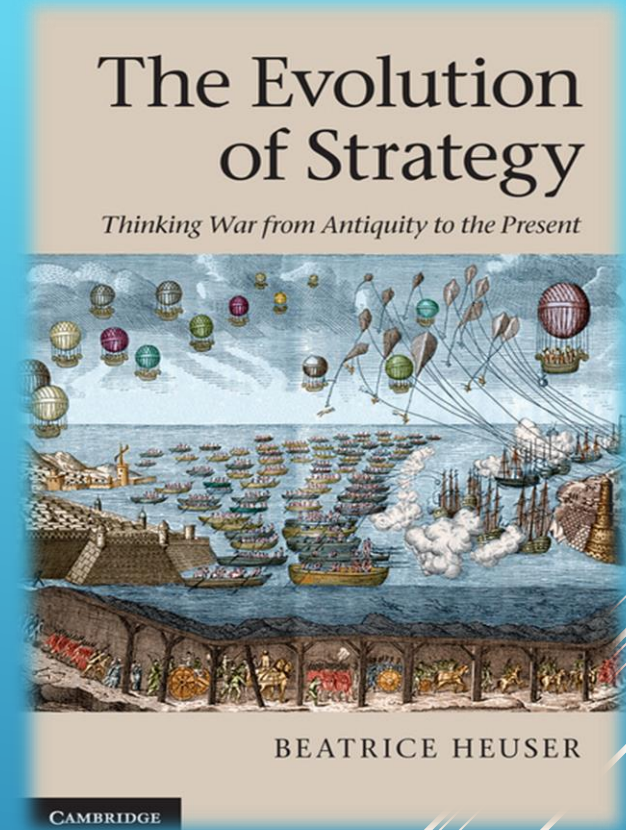


GLOBAL MARITIME CONFLICT TRENDS



GLOBAL MARITIME TENSION: STRATEGY, CONCEPTS AND CAPABILITIES MATTER

- ▶ **Torrington** – Fleet in Being, *Guerre de Course*, The Blockade, Rise of Mercantilism naval power
- ▶ **Alfred T. Mahan**: *Command of the Sea* and overseas presence was important to Great Powers. Protection of Seaborne Commerce was secondary to domination in war. Great powers required great navies.
- ▶ **Julian Corbett**: Navies were important to land warfare – securing lines of communication was more important the destroying the enemy's fleet.
- ▶ **Today**: Great navies provide presence and power projection to maintain freedom of movement on the high seas in support of a global economy. Regional power projection and control of territorial waters and EEZs is growing in importance
- ▶ **Distributed Lethality**: Every ship is shooter



THE EVOLUTION OF NAVAL STRATEGY

- ▶ *Global, Regional or National Interest Priorities?*
- ▶ *Future Threat Assessment?*
- ▶ *Global Engagement Model: Multi-lateral, Unilateral or Selective Engagement?*
- ▶ *Presence or Power Projection?*
- ▶ *Green or Blue Economy?*
- ▶ *Resource Limitations*

YOUR GRAND STRATEGY

WHAT IS THE ROLE OF YOUR NAVY?



- ▶ Major Global Force Projection
- ▶ Medium Global Force Projection
- ▶ Medium Regional Force Projection Navies
- ▶ Adjacent Force Projection Navies
- ▶ Offshore Territorial Defense Navies
- ▶ Inshore Territorial Defense Navies
- ▶ Constabulary Forces
- ▶ Token Navies



A TYPOLOGY FOR NAVIES

ERIC GROVE

- ▶ **Strategy:** What are the country's national interests?
- ▶ **Strategic Objective:** What must the Navy do to support the national interests?
- ▶ **Strategic Concept:** How will the Navy operate to achieve success?
- ▶ **Capabilities:** What does the navy need to be successful? How much does the Navy need?

THE GOLDEN THREAD TO SUCCESS



- ▶ *Rapidly Evolving – Domestic Tension*
- ▶ *Clear National Divergence of Maritime Roles & Missions*
- ▶ *Maritime Domain Awareness, Sea Denial to Power Projection*
- ▶ *Integration With National Strategies*
- ▶ *Limited, But Increasing Regional Cooperation*
- ▶ *Contentious Roles, Missions Capability Debate*
- ▶ *Appreciation for Blue Economy*
- ▶ *Personnel Retention With Strengthening Economies*
- ▶ *Resource Limited*

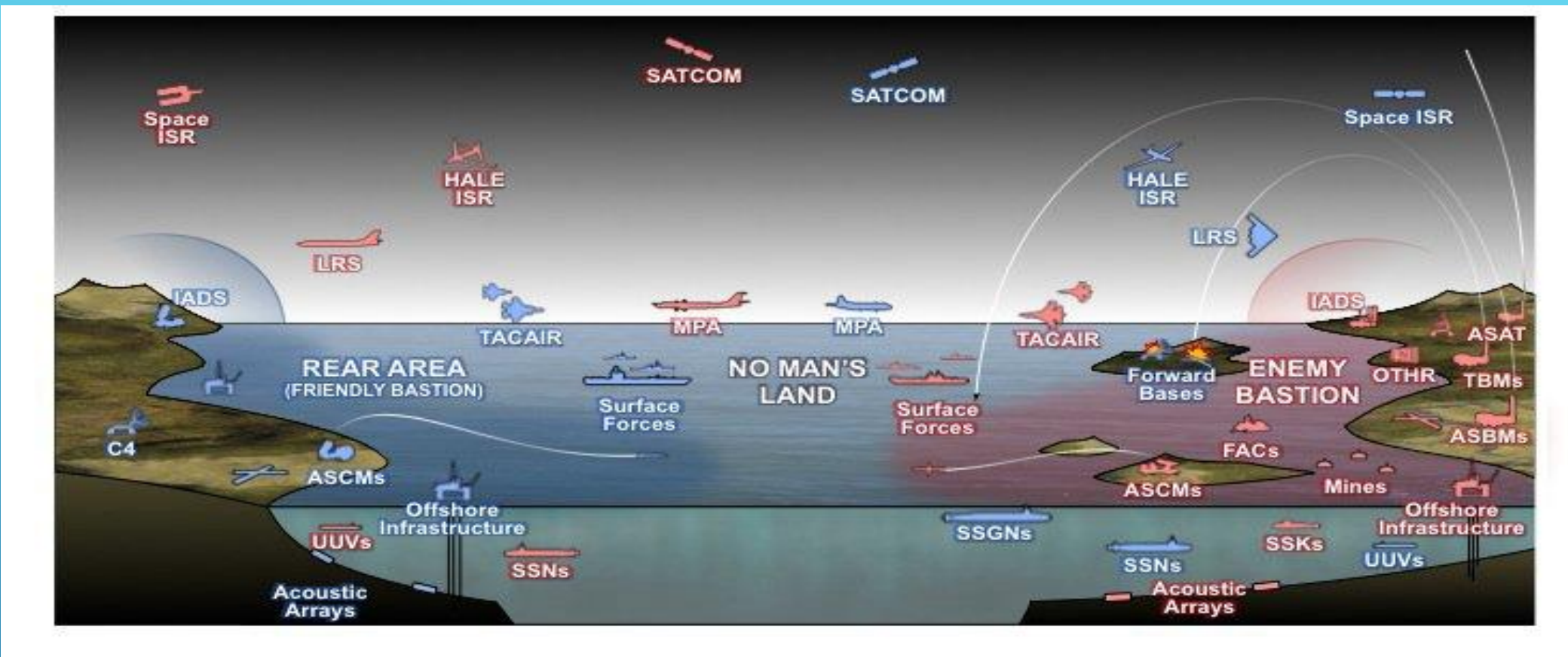
CONTEMPORARY CHARACTERISTICS OF LATIN AMERICA MARITIME POWER



- ▶ *Multi-Mission*
- ▶ *Plug & Play*
- ▶ *Networked*
- ▶ *Survivability*
- ▶ *Increasing Electric Power Requirements*
- ▶ *Smaller Crews - Robotics*
- ▶ *Capability Over Capacity*
- ▶ *Cyber-Secure*
- ▶ *3-D Printing*
- ▶ *Efficiency With Green/Bio Fuels*

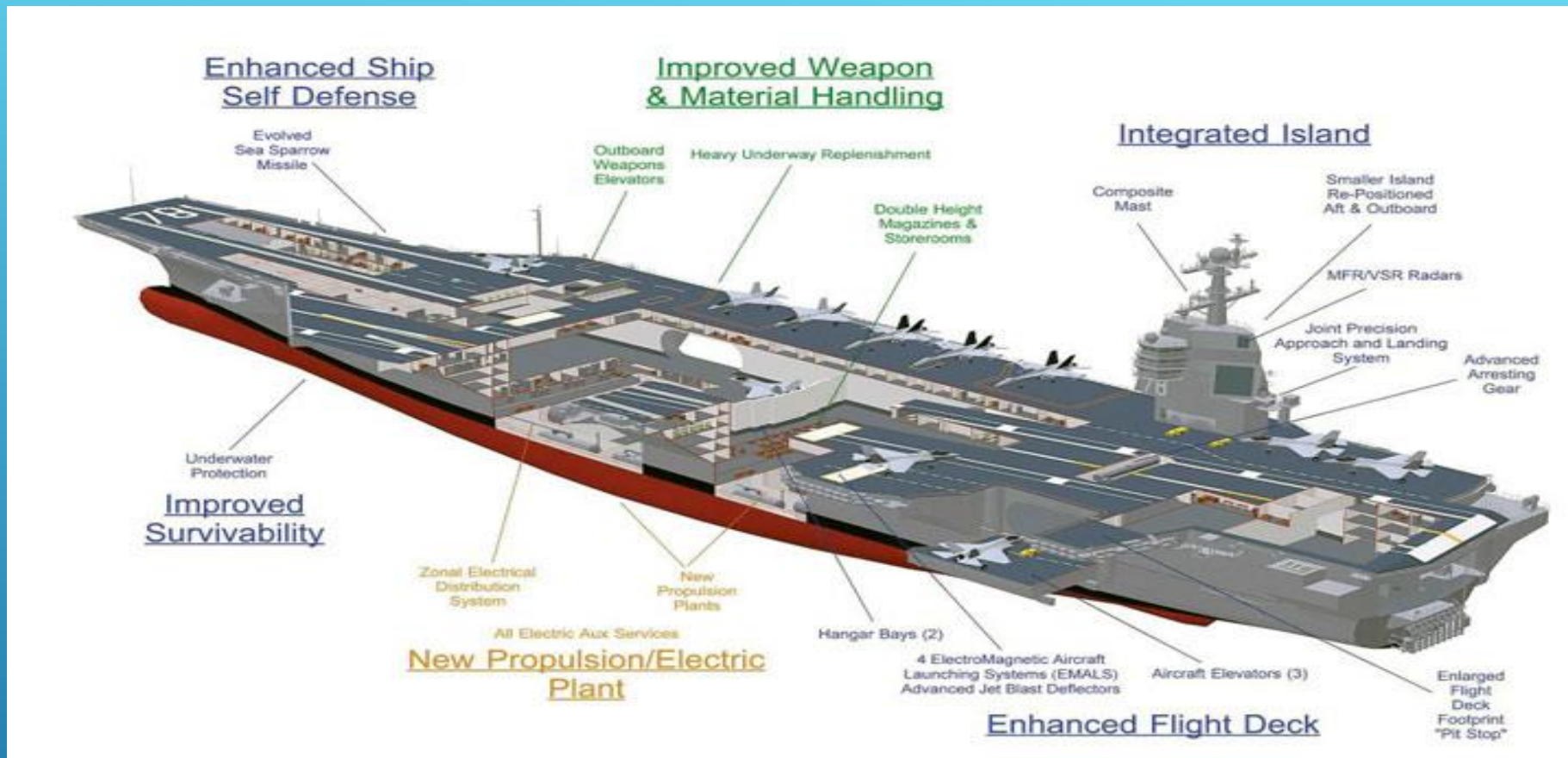


FUTURE NAVAL CONSTRUCTION TRENDS



CSBA'S *NO MAN'S SEA*

SYDNEY FREEDBERG, BREAKING DEFENSE



- **Survivability**
- **Large Power Requirements**
- **Electric Modifications to Propulsion, Air Craft Launching**
- **Networked**
- **Cyber Security Emphasis**

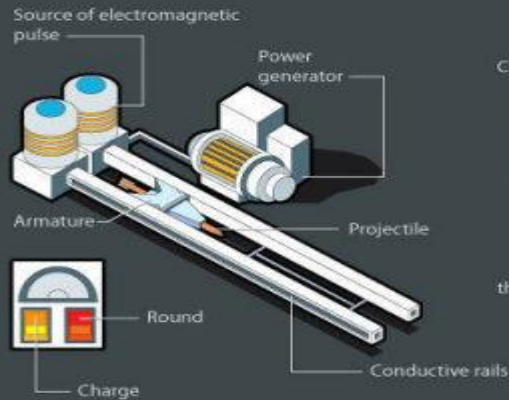
CV GERALD FORD ENGINEERING IMPROVEMENTS

Railgun – a 21st-century weapon

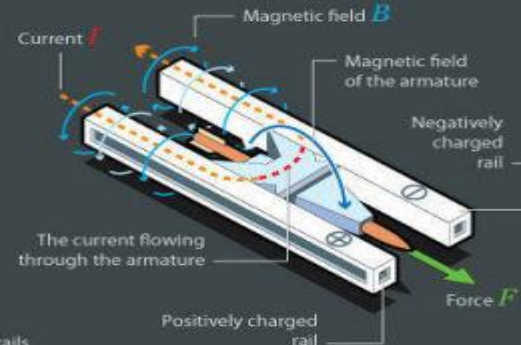
In the opinion of the U.S. military, electromagnetic weapons have the potential to replace conventional artillery in the near future

! The most powerful railgun in the world was designed at the U.S. naval research laboratory in Dahlgren, Virginia. The energy of its rounds is 33 megajoules. Projectile velocity is five times the speed of sound and its firing range can reach 370 km

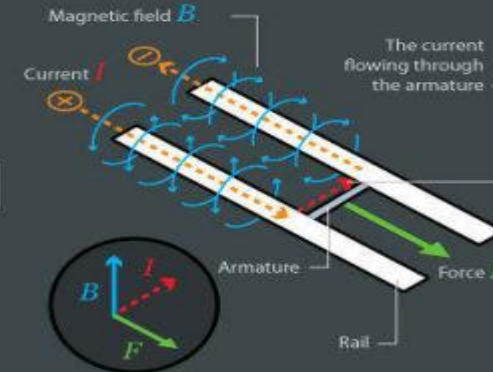
Railgun device



Interaction of magnetic fields



The principle behind Lorentz force

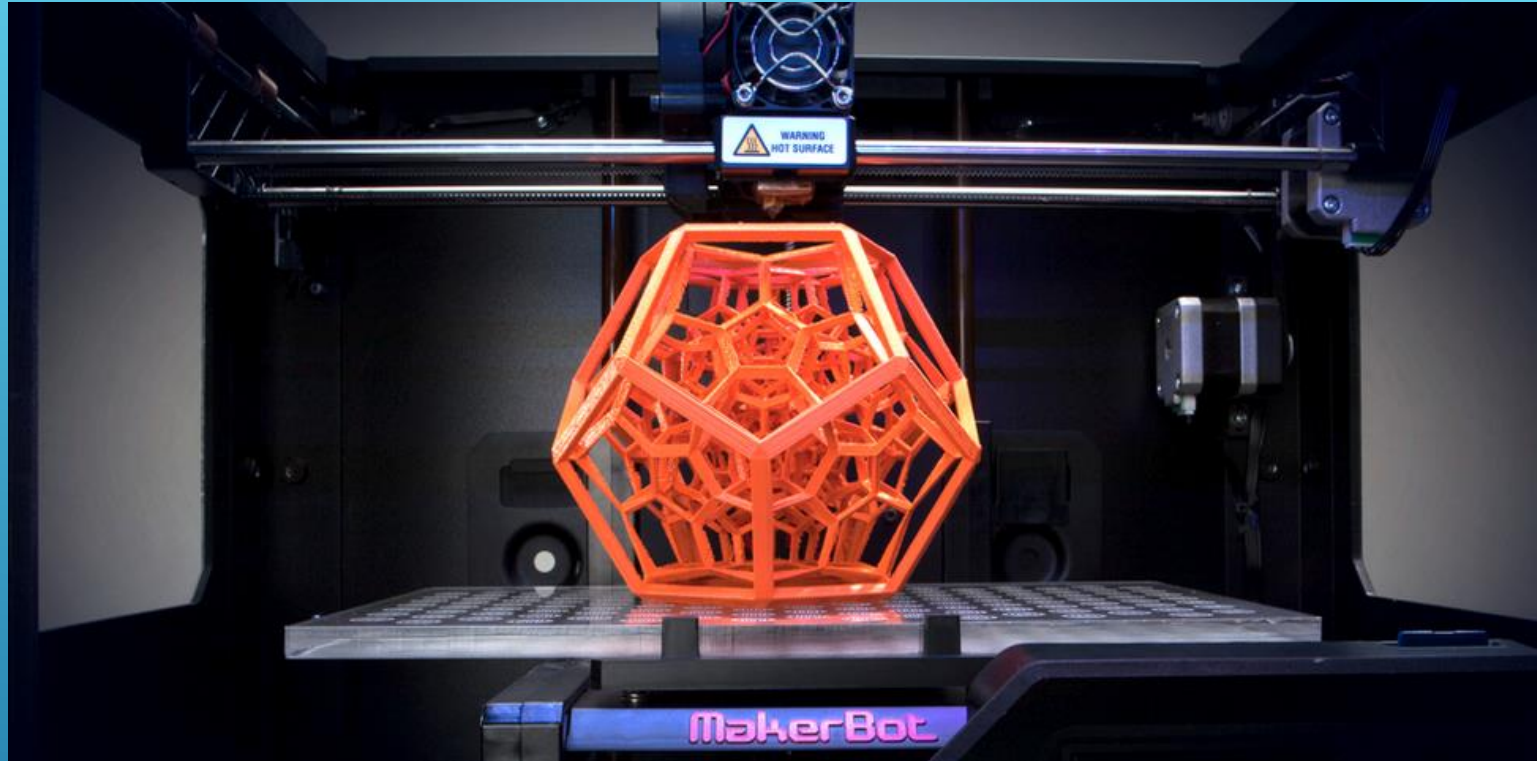


The railgun uses electromagnetic force (Lorentz force) to propel an electrically conductive projectile that is initially part of a chain. Current I , flowing through the rails, generates magnetic field B in the rails and armature. As a result, under the action of force F , the armature is pushed out of the magnetic field of the rails and the projectile accelerates

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THE FUTURE IS ELECTRIC POWER & NETWORKED SYSTEMS



THE 3D PRINTER – EVERY SHIP NEEDS ONE

- ▶ Successful Shipyards will integrate national interests, strategic planning, global maritime assessments and resource limitations into long-range construction plans. Balancing growth, profit and nationalism is not easy – but the best shipyards find a way.

BALANCING PROFIT AND PATRIOTISM

(THIS CAN BE DIFFICULT)

