

## Professional Paranoia

Lessons From USS Zumwalt



Aerospace & Defense Forum

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1

## Agenda

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- My Background
- USS Zumwalt Overview
- Professional Paranoia & Lessons From Command
- Question & Answer

2

### My Background












3

### Naval Revolution



**- HMS Dreadnought (1906)**

- New weapons system
- New fire control system
- New propulsion system
- Modified hull form




**- USS Zumwalt (2013)**





- New weapons system
- New fire control system
- New propulsion system
- **New hull form**
- **New C2 system**
- **New crew concept**
- **New maintenance concept**
- **New Logistics concept**

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4




## DDG 1000 History




1992 1994 1998 2001 2006 2008 2009 2009 2011 Feb 2013 Oct 2013 May 2014 Dec 2015 May 2016 Oct 2016 Dec 2016 Nov 2017 2018-2019	Iowa class battleships de-activated SC-21 (Surface Combatant for the 21 <sup>st</sup> Century) Program DD 21 DD(X) DDG 1000 Named "Zumwalt" Construction Contracted with BIW Nunn-McCurdy review Construction Begins at Bath, ME Keel Laying PCU Established (Crew begins to assemble and train) Launched Christened Sea Trials Delivered Commissioned Arrived San Diego Re-Missioned for Surface Strike Fleet Introduction & Trials	 <p style="text-align: center; font-size: small;"><i>Shadow</i></p>  <p style="text-align: center; font-size: small;"><i>Stiletto</i></p>  
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5



## Building Leviathan



**340,000 work orders**

**6,900 tons of steel**


**230 tons of welding rod**

**475 miles of cable**

**45 miles of pipe**

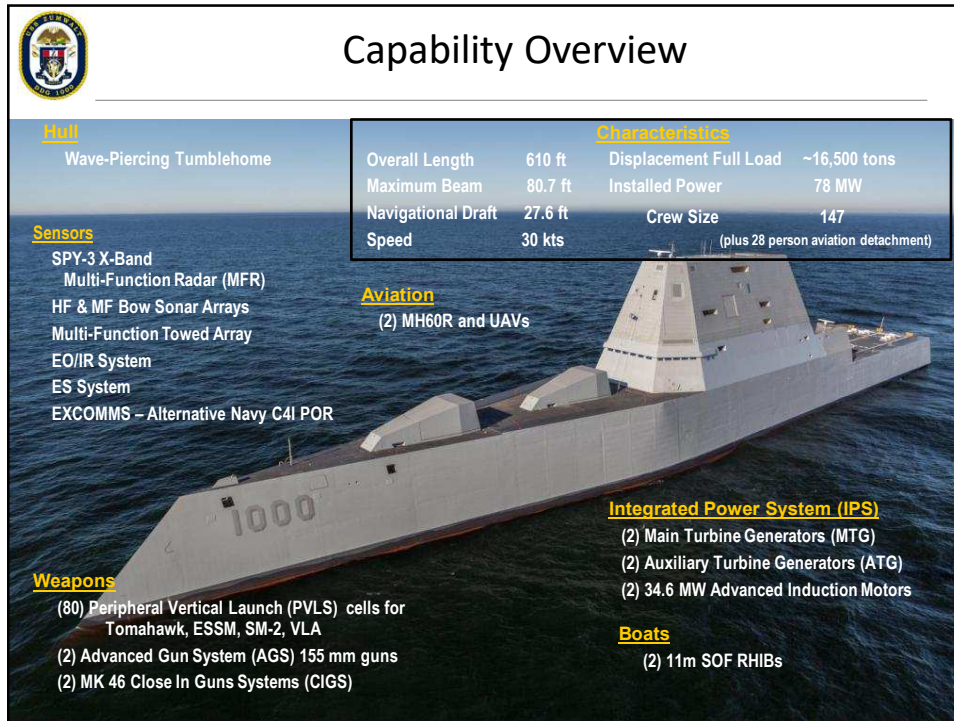
**78,000 gallons of paint**


**\$4.1 Billion**



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6





## Capability Overview

Hull	Characteristics	
Wave-Piercing Tumblehome	Overall Length	610 ft
	Maximum Beam	80.7 ft
	Navigational Draft	27.6 ft
	Speed	30 kts
	Displacement Full Load	~16,500 tons
	Installed Power	78 MW
	Crew Size	147 (plus 28 person aviation detachment)

**Sensors**

- SPY-3 X-Band
- Multi-Function Radar (MFR)
- HF & MF Bow Sonar Arrays
- Multi-Function Towed Array
- EO/IR System
- ES System
- EXCOMMS – Alternative Navy C4I POR

**Aviation**

- (2) MH60R and UAVs

**Integrated Power System (IPS)**

- (2) Main Turbine Generators (MTG)
- (2) Auxiliary Turbine Generators (ATG)
- (2) 34.6 MW Advanced Induction Motors

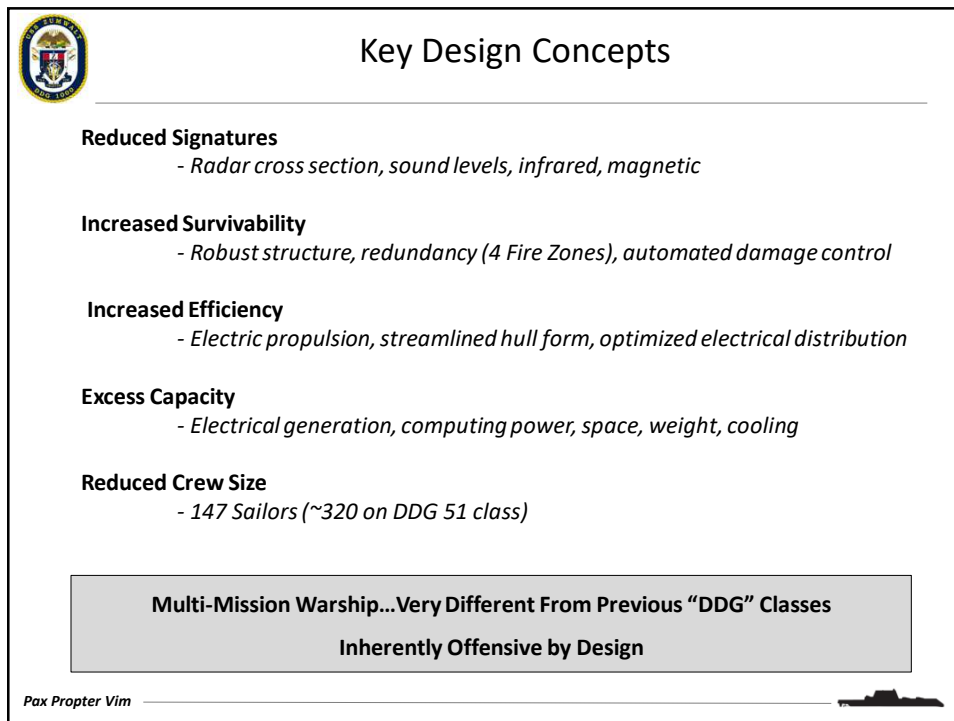
**Weapons**


- (80) Peripheral Vertical Launch (PVLS) cells for Tomahawk, ESSM, SM-2, VLA
- (2) Advanced Gun System (AGS) 155 mm guns
- (2) MK 46 Close In Guns Systems (CIGS)

**Boats**

- (2) 11m SOF RHIBs

7






## Key Design Concepts


- Reduced Signatures**  
- Radar cross section, sound levels, infrared, magnetic
- Increased Survivability**  
- Robust structure, redundancy (4 Fire Zones), automated damage control
- Increased Efficiency**  
- Electric propulsion, streamlined hull form, optimized electrical distribution
- Excess Capacity**  
- Electrical generation, computing power, space, weight, cooling
- Reduced Crew Size**  
- 147 Sailors (~320 on DDG 51 class)

**Multi-Mission Warship...Very Different From Previous “DDG” Classes**



**Inherently Offensive by Design**

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8

 **People Changes**


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**Training**  
Established processes  
Well defined roles  
Mature support infrastructure

**Education**  
Dynamic processes (pseudo-AI)  
Fluid roles  
Limited support infrastructure


9

 **Re-Missioning & Fleet Introduction**

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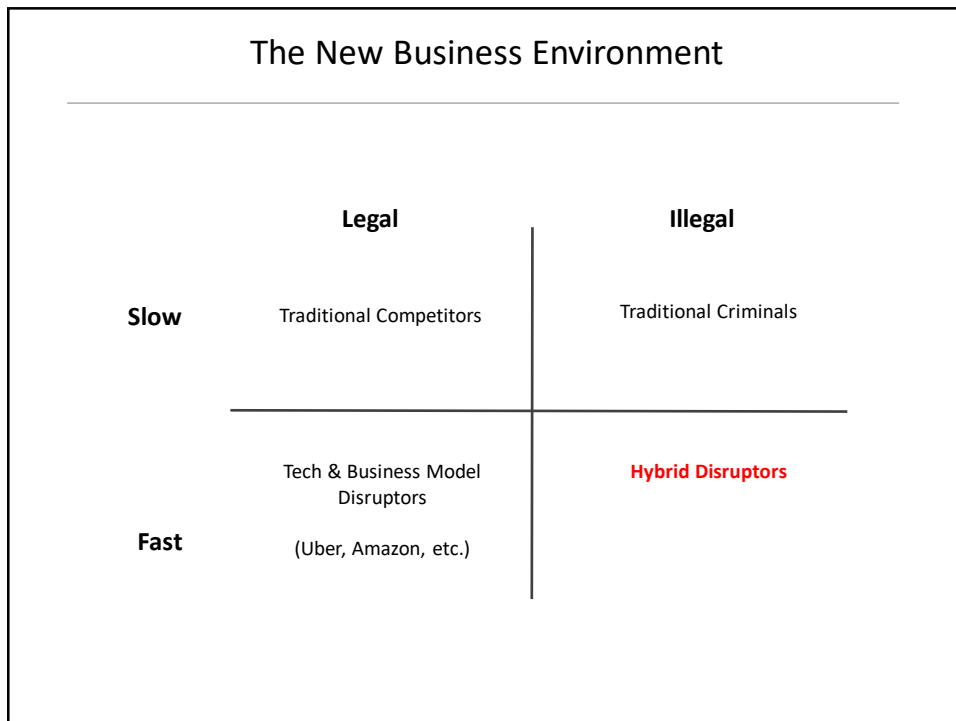
**Land Attack**                      **Surface Strike**

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10



11



12

### How Did We Get Here?

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- **1945:** UN System created
  - Re-structures post WWII world
  - Also seen as “locking in” the advantages of the Victors
  
- **1990's:** Globalization & Desert Storm
  - US military and economic might seen as invincible
  - US perceived as manipulating UN System
  - China, Russia and others gain money, tech, market access

  
- **2000's:** Rise of Hybrid Competition
  - Asymmetric approaches to American strengths
  - Intent to undermine and re-structure the international system
  - Desire to stay beneath the threshold of military or collective response


13

### The China Model

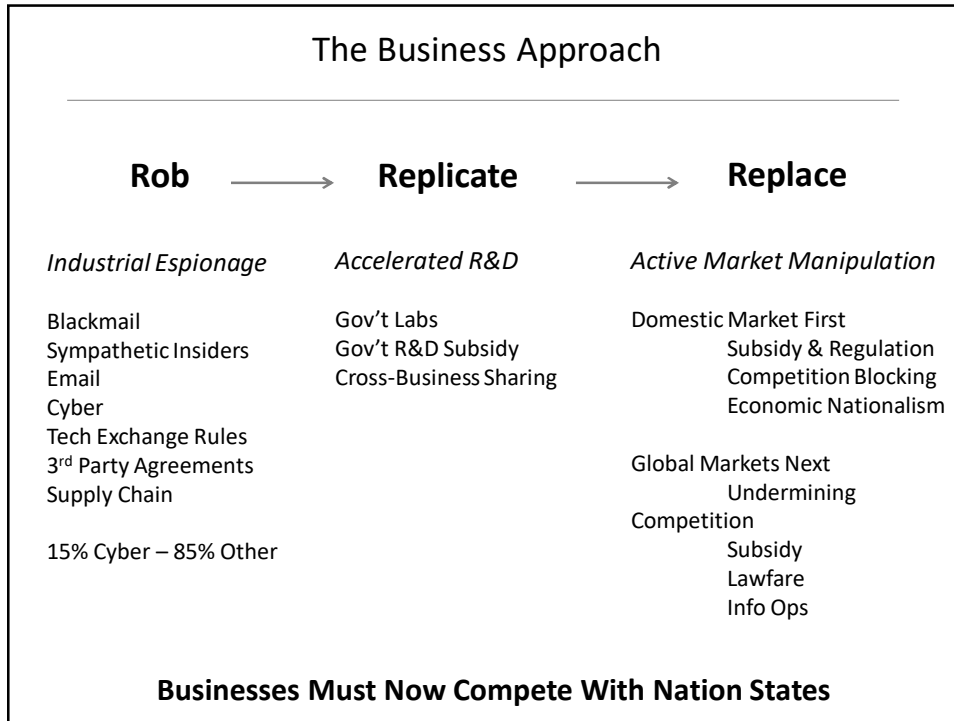
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- **1986:** China's 86-3 Program of industrial espionage launched
- **1999:** “Unrestricted Warfare” doctrine advocates “all means” economic attacks
- **2003:** “3 Warfares” (Legal, Media, Psychological) to reshape int'l law, rules, norms
- **2012:** Beginning of “hybrid” operations by China and Russia
- **c. 2015:** Xi Jinping institutes “Civil-Military Fusion” policy

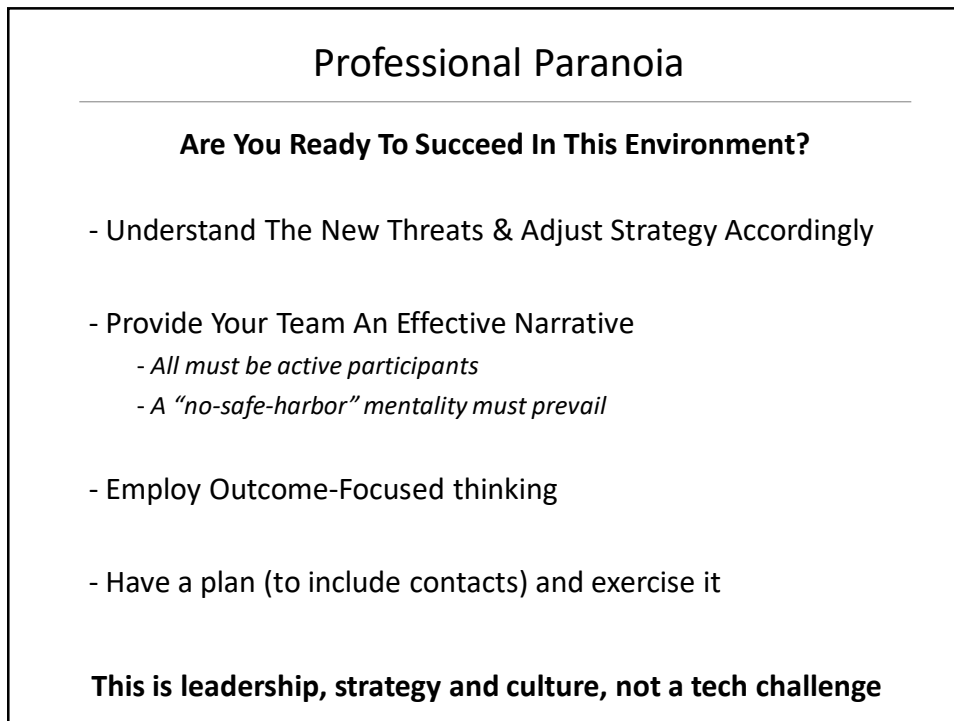
“Proposing a new concept of weapons does not require relying on the springboard of new technology, it just demands lucid and incisive thinking. However, this is not a strong point of the Americans, who are slaves to technology in their thinking. The Americans invariably halt their thinking at the boundary where technology has not yet reached.”

“The new concept of weapons will cause ordinary people and military men alike to be greatly astonished at the fact that commonplace things that are close to them can also become weapons with which to engage in war. We believe that some morning people will awake to discover with surprise that quite a few gentle and kind things have begun to have offensive and lethal characteristics.”

14



15



16



Q & A

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*"If Batman had a ship, it would be USS Zumwalt"*  
- ADM Harry Harris, DDG 1000 Commissioning